CiM-550

IP-Enabled Satellite Modem

Installation and Operation Manual

Part Number CD/CIM550.IOM

Rev. 2

December 3, 2002

Errata A

Comtech EFData Documentation Update

Subject: Changes to Chapter 5 Serial Remote Control

Date: December 16, 2002
Document: CiM-550 Satellite Modem Installation and Operation Manual, Rev. 2, dated December 16, 2002
Part Number: CD/CiM550.EA2
Collating Instructions: Attach this page to page 5-9

Comments:

The following changes provide updated information TX Carrier On/Off State. This information will be incorporated into the next revision.

Change Specifics:

Tx Carrier On/Off State	TXO=	1 byte, value of 0, 1, 2, or 3	Command or Query. Tx Carrier On/Off state, where: 0 = Off due to front panel or rem. control command 1 = On 2 = Off due to ext H/W Tx Carrier Off command (not a valid argument when used as a command) All other codes invalid. 3 = RTI Example: TXO=1 (which is Tx Carrier On)	TXO= (message ok) TXO? (received ok, but invalid argument found) TXO* (message ok, but not permitted in current mode)	TXO?	TXO=x (Note that 2 is not a valid argument when used as a command)

Errata B

Comtech EF Data Documentation Update

Subject: Addition to Chapter 4, Front Panel Menus

Date: January 15, 2003
Document: CiM-550 IP Enabled Satellite Modem Installation and Operation Manual, Rev. 2, dated December 16, 2002
Part Number: CD/CiM550.EB2
Collating Instructions: Attach this page to page 47

Comments:

The following changes provide additional information for Front Panel Menus. This information will be incorporated into the next revision.

Change Specifics:

4.1.6.9 SELECT\INFO\FAST

DISPLAY	SELECTIONS/DESCRIPTION	
`FAST OPTIONS: 123456789` `550T LS MODE: OFF`	The FAST options are:	
	550T LS Mode:	OFF/ON
	TCP Acceleration	OFF/ON
	Data Encryption	OFF/ON
	IP Data Compression	OFF/ON
	Quality of Service	OFF/ON
	Network Addrs Trans:	OFF/ON
	Transparent Bridging:	OFF/ON
	IGMP:	OFF/ON
	Header Cmpression:	OFF/ON

CiM-550

IP Satellite Enable Modem
Installation and Operation Manual

Part Number CD/CIM550.IOM
REV. 2
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Comtech EF Data is an ISO 9001
Registered Company.

Comtech EF Data, 2114 West 7th Street, Tempe, Arizona 85281 USA, (480) 333-2200, FAX: (480) 333-2161

CUSTOMER SUPPORT

Contact the Comtech EF Data Customer Support Department for:

Product support or training
Information on upgrading or returning a product
Reporting comments or suggestions concerning manuals

Contact Customer Support using any of the following methods:

Mail: Comtech EF Data
Customer Support Department
2114 West 7th Street
Tempe, Arizona 85281 USA

Email: cimfss@comtechefdata.com

Internet: www.comtechefdata.com

Phone: (480) 333-2200 (Main Comtech EF Data Number)
(480) 333-4357 (Customer Support Desk)

Fax: (480) 333-2161

To return a Comtech EF Data product (in-warranty and out-of-warranty) for repair or replacement:

1. Request a Return Material Authorization (RMA) number from the Comtech EF Data Customer Support Department.

2. Be prepared to supply the Customer Support representative with the model number, serial number, and a description of the problem.

3. To ensure that the product is not damaged during shipping, pack the product in its original shipping carton/packaging.

4. Ship the product back to Comtech EF Data. (Shipping charges should be prepaid.)

For more information regarding the warranty policies, see Warranty Policy, p. xx.

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ABOUT THIS MANUAL

This manual provides installation and operation information for the Comtech EF Data Cim-550 IP Enabled Satellite Modem. This is a technical document intended for earth station engineers, technicians, and operators responsible for the operation and maintenance of the Cim-550 IP Enabled Satellite Modem.

RELATED DOCUMENTS

Comtech EF Data CDM-550 Satellite Modem Installation and Operation Manual

CONVENTIONS AND REFERENCES

CAUTIONS AND WARNINGS

Indicates information critical for proper equipment function.

Indicates a hazardous situation that, if not avoided, may result in minor or moderate injury. CAUTION may also be used to indicate other unsafe practices or risks of property damage.

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

METRIC CONVERSION

Metric conversion information is located on the inside back cover of this manual. This information is provided to assist the operator in cross-referencing English to Metric conversions.

RECOMMENDED STANDARD DESIGNATIONS

Recommended Standard (RS) Designations have been superseded by the new designation of the Electronic Industries Association (EIA). References to the old designations are shown only when depicting actual text displayed on the screen of the unit (RS-232, RS-485, etc.). All other references in the manual will be shown with the EIA designations (EIA-232, EIA-485, etc.) only.

TRADEMARKS

All product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

REPORTING COMMENTS OR SUGGESTIONS CONCERNING THIS MANUAL

Comments and suggestions regarding the content and design of this manual will be appreciated. To submit comments, please contact the Comtech EF Data Customer Support Department.

EMC COMPLIANCE

This is a Class A product. In a domestic environment, it may cause radio interference that requires the user to take adequate protection measures.

EN55022 COMPLIANCE

This equipment meets the radio disturbance characteristic specifications for information technology equipment as defined in EN55022.

EN50082-1 COMPLIANCE

This equipment meets the electromagnetic compatibility/generic immunity standard as defined in EN50082-1.

FEDERAL COMMUNICATIONS COMMISSION (FCC)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference; in which case, users are required to correct the interference at their own expense.

Note: To ensure compliance, properly shielded cables for DATA I/O shall be used. More specifically, these cables shall be shielded from end to end, ensuring a continuous shield.

SAFETY COMPLIANCE

EN 60950

Applicable testing is routinely performed as a condition of manufacturing on all units to ensure compliance with safety requirements of EN60950.

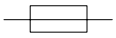
This equipment meets the Safety of Information Technology Equipment specification as defined in EN60950.

LOW VOLTAGE DIRECTIVE (LVD)

The following information is applicable for the European Low Voltage Directive (EN60950):

<HAR>	Type of power cord required for use in the European Community.
	CAUTION: Double-pole/Neutral Fusing. ACHTUNG: Zweipolige bzw. Neutralleiter-Sicherung.

International Symbols:

Symbol	Definition
	Alternating Current.
	Fuse.

Symbol	Definition
	Protective Earth.
	Chassis Ground.

Note: For additional symbols, refer to “Cautions” listed earlier in this preface.

WARRANTY POLICY

This Comtech EF Data product is warranted against defects in material and workmanship for a period of two years from the date of shipment. During the warranty period, Comtech EF Data will, at its option, repair or replace products that prove to be defective.

For equipment under warranty, the customer is responsible for freight to Comtech EF Data and all related custom, taxes, tariffs, insurance, etc. Comtech EF Data is responsible for the freight charges **only** for return of the equipment from the factory to the customer. Comtech EF Data will return the equipment by the same method (i.e., Air, Express, Surface) as the equipment was sent to Comtech EF Data.

LIMITATIONS OF WARRANTY

The foregoing warranty shall not apply to defects resulting from improper installation or maintenance, abuse, unauthorized modification, or operation outside of environmental specifications for the product, or, for damages that occur due to improper repackaging of equipment for return to Comtech EF Data.

No other warranty is expressed or implied. Comtech EF Data specifically disclaims the implied warranties of merchantability and fitness for particular purpose.

EXCLUSIVE REMEDIES

The remedies provided herein are the buyer's sole and exclusive remedies. Comtech EF Data shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

DISCLAIMER

Comtech EF Data has reviewed this manual thoroughly in order that it will be an easy-to-use guide to your equipment. All statements, technical information, and recommendations in this manual and in any guides or related documents are believed reliable, but the accuracy and completeness thereof are not guaranteed or warranted, and they are not intended to be, nor should they be understood to be, representations or warranties concerning the products described. Further, Comtech EF Data reserves the right to make changes in the specifications of the products described in this manual at any time without notice and without obligation to notify any person of such changes.

If you have any questions regarding the equipment or the information in this manual, please contact the Comtech EF Data Customer Support Department.

NOTES:

Chapter 1. Introduction

CiM-550 IP-Enabled Satellite Modem

1.1 INTRODUCTION

The CiM-550 is a high-performance, low-cost, IP-enabled satellite modem designed for closed network Single Channel Per Carrier (SCPC) links. It is ideal for many VSAT applications. Offering a range of data rates from 2.4 to 2048 kbps in 1 bit per second steps, the modem includes Viterbi forward error correction as standard. The Turbo Product Codec is available as an option.

The modem is compact, 1U high and 12 inches deep, and consumes only 25 watts typically. It has the following configuration and control capabilities:

- Front panel VFD display and keypad for local configuration and control
- Rear panel Remote Control Serial interface (DB9) for modem configuration and control.
- Rear panel Console Port (RJ-11) for Ethernet interface configuration and control.
- Rear panel Ethernet Data interface (RJ-45).

1.2 MAJOR ASSEMBLIES

Assembly	Description
PL/0391	Modem Card
PL/9161-1	IP Module

1.3 STANDARD FEATURES

- 10baseT/100baseT Ethernet Interface
- Static IP routing for unicast and multicast
- Powerful network management
- Web Server interface for complete product management
- SNMP with private MIB
- Telnet interface for remote product M & C
- Console Port interface for local network management
  - Configurable serial interface (EIA-232 or RS485) for local management
- Remote software/firmware upgrade via FTP
- Configuration backup and restore via FTP
- Local software/firmware via console port
- Data rates from 2.4 to 2048 kbps
- Symmetric as well as asymmetric operation for maximum bandwidth efficiency
- Automatic Uplink Power Control (AUPC)
- CDM-550 Emulation Mode

1.3.1 AUPC

An important innovation in the CiM-550 is the addition of Automatic Uplink Power Control (AUPC). This feature enables the modem to automatically adjust its output power to maintain the Eb/No of the remote end of the satellite link constant. This provides protection against rain fading, a particularly severe problem with Ku-band links.

To accomplish this, the framed mode of operation must be used, and the distant end modem constantly sends back information about the demodulator Eb/No using reserved bytes in the overhead structure. Using the Eb/No, the local modem then adjusts its output power, and hence, a closed-loop feedback system is created over the satellite link.

A benefit of this feature is that whenever framed operation is selected, the remote demodulator’s Eb/No can be viewed from the front panel display of the local modem.

1.3.2 SOFTWARE

The internal software is both powerful and flexible, permitting storage and retrieval of up to 10 different modem configurations. The modem uses ‘flash memory’ technology internally, and new firmware can be uploaded to the unit from an external PC. This simplifies software upgrading, and updates can now be sent via the Internet, E-mail, or on disk. The upgrade can be performed without opening the unit, by simply connecting the modem to the serial port of a computer.

1.3.3 VERIFICATION

The unit includes many test modes and loopbacks for rapid verification of the correct functioning of the unit. Of particular note is the IF loopback, which permits the user to perform a quick diagnostic test without having to disturb external cabling. During the loopback, all of the receive configuration parameters are temporarily changed to match those of the transmit side. When normal operation is again selected, all of the previous values are restored.

1.3.4 DATA INTERFACES

The CiM-550 includes, as standard, a universal data interface which eliminates the need to exchange interface cards for different applications. The interfaces offered include:

- 10baseT/100baseT Ethernet (RJ-45 connector)
- EIA-422 (EIA530) DCE
- V.35 DCE
- Synchronous EIA-232 DCE
- Asynchronous EIA-232 (at data rates up to 56 kbaud)
- X.21 DTE and DCE

1.3.5 CDM-550 EMULATION MODE

The CiM-550 can be made to operate in CDM-550 emulation mode, where it behaves exactly like the Comtech EF Data CDM-550 satellite modem. The emulation mode is selected from the front panel by selecting Configuration/Interface and then selecting either EIA-422/530, V.35, or EIA-232 as the interface rather than IP. The CiM-550 will then pass standard serial traffic, like a CDM-550, but will not pass IP traffic. The CiM-550 can still be accessed via the ethernet port using Telnet, HTTP, or SNMP.

1.4 OPTIONS

Enhancing the CiM-550's performance is easy. Additional features can be added quickly on site, using the FAST access code purchased from Comtech EF Data. To enable these features, simply enter the code at the front panel.

Description	Software Version
Turbo Product Coding (TPC)	1.0.1 and Later
TCP acceleration	Future
DES Data Encryption	1.0.1 and Later
IP Datagram Compression	Future
IP Header Compression	Future
Quality of Service (QoS)	1.0.1 and Later
Network Address Translation (NAT)	Future
EasyConnect™ for non-IP traffic	Future
IGMP support for multicast	1.0.1 and Later
1:1 Redundancy with CRS-100	1.0.1 and Later

1.4.1 TURBO PRODUCT CODING (TPC)

The optional Turbo Product Coding (TPC) is a recent development in FEC techniques that delivers significant performance improvements when compared to Viterbi with concatenated Reed-Solomon. TPC simultaneously offers increased coding gain, markedly lower decoding delay (leading to improved TCP/IP performance), and bandwidth savings of up to 40%. The TPC option includes two modes (BPSK 22/44 and BPSK 5/16) that permit operation from exceptionally small antennas, where flux density issues are of concern.

1.4.2 TCP ACCELERATION

To compensate for the TCP performance degradation in a high delay and high BER (Bit Error Rate) environment, the CiM-550 incorporates an optional proprietary transparent TCP acceleration mechanism that will allow a TCP session to optimally use the available link capacity, while preserving end-to-end transport reliability. TCP acceleration will be subject to user configured Quality of Service (QoS) restrictions for the route.

1.4.3 DES ENCRYPTION WITH ABILITY TO CHANGE KEYS

The CiM-550 optionally supports DES-56 encryption and decryption. Each unit supports 2 encryption keys and 2 decryption keys. The keys are user configurable. Each route can be assigned to be encrypted by key 1 or key 2 or transmitted in clear.

1.4.4 IP DATAGRAM COMPRESSION

Optionally, the CiM-550 supports IP datagram compression to provide improved bandwidth. IP payload is compressed while the IP Headers remain unaffected.

1.4.5 IP HEADER COMPRESSION

Optionally, the CiM-550 supports IP header compression to provide improved bandwidth usage especially for smaller datagrams where the header overhead could be significant (e.g. VoIP).

1.4.6 QUALITY OF SERVICE

Quality of Service (QoS) is an optional feature of the CiM-550. A QoS can be assigned to each route. It dictates the guaranteed minimum and allowable maximum data rate for that route. The CiM-550 classifies the incoming traffic based on the destination address and allocates bandwidth based on the configured profile.

1.4.7 NETWORK ADDRESS TRANSLATION (NAT)

Optional NAT is a feature that allows a LAN to use private IP addresses for internal communications and share a totally different IP address for external communications.

1.4.8 EASYCONNECT™ FOR NON-IP TRAFFIC

The CiM-550 optionally supports EasyConnect™ to support non-IP traffic. This allows the CiM-550 to simultaneously route IP traffic and bridge non-IP traffic, such as IPX. The non-IP traffic will be subject to user configured QoS restrictions.

1.4.9 IGMP SUPPORT FOR MULTICAST

IGMP is an optional feature in the CiM-550. If enabled, it responds to IGMP queries for the configured multicast routes on the transmit side and generates IGMP queries on the receive side. If there are no active IGMP receivers on the LAN it will stop forwarding the multicast traffic (received from the satellite) to the LAN.

1.4.10 1:1 REDUNDANCY CONFIGURATION

The CiM-550 supports 1:1 redundancy in conjunction with the CRS-100 IF Switch. In a redundant configuration the primary CiM-550 communicates with the backup CiM-550 for synchronization and status checks. If there is a failure of the primary unit, the backup CiM-550 assumes the role of the primary modem with minimal disruption to the traffic. The switchover is transparent to other devices on the LAN.

1.5 SPECIFICATIONS

SYSTEM SPECIFICATIONS (FULLY ENHANCED)	
Frequency Range	52 to 88 MHz, 104 to 176 MHz (option), stability ± 1.5 ppm, 0 to 50^0 C
Input/Output Impedance	50 and 75 Ohms (Front panel selectable), 17 dB min. return loss
IF Connector	BNC, female
Data Interface	10baseT/100baseTX Ethernet (RJ-45 connector)
	DB25 female, providing: *(CDM-550 mode only)*
	EIA422/EIA530 DCE
	V.35 DCE
	X.21 DCE and DTE
	Sync / Async EIA232
External TX Carrier Off	By TTL 'low' signal or external contact closure – hardware function automatically overrides processor
WAN Encapsulation	HDLC [1]
Data rate range	Overall, 2.4 - 2048 kbps 4.8 kbps - 2048 kbps, Uncoded BPSK 9.6 kbps - 2048 kbps, Uncoded QPSK/OQPSK 2.4 kbps - 1024 kbps, Rate 1/2 BPSK 4.8 kbps - 2048 kbps, Rate 1/2 QPSK/OQPSK 7.2 kbps - 2048 kbps, Rate 3/4 QPSK/OQPSK 8.4 kbps - 2048 kbps, Rate 7/8 QPSK/OQPSK 2.4 kbps - 1145 kbps, Rate 21/44 BPSK Turbo 2.4 kbps - 750 kbps, Rate 5/16 BPSK Turbo (Fully Independent Tx and Rx rates)
Scrambling	Transparent mode, no RS coding - per CCITT V.35 EDMAC mode, no RS coding - externally synchronized Turbo Product Code mode - externally synchronized

FEC	
FEC	None: Uncoded BPSK/QPSK/OQPSK Viterbi: k=7, per IESS 308/309 BPSK: Rate 1/2 QPSK/OQPSK: Rate 1/2, Rate 3/4 and Rate 7/8 Sequential: k=36 (Rate 1/2) per IESS 309 k= 63 (Rate 3/4) per IESS 309 k= 87 (Rate 7/8) Turbo Product Codec (Optional plug-in card): Rate 3/4 QPSK - 2 dimensional Rate 21/44 BPSK - 3 dimensional Rate 5/16 BPSK - 3 dimensional
Overhead Framed EDMAC/AUPC	5% overhead (Except Turbo BPSK modes, which add 1.5%)
AUPC	Target Eb/No Range: 0 to 9.9 dB
	Max AUPC Range: 0 to 9 dB
Monitor Functions	Distant end Eb/No Tx power level increase
Miscellaneous	
Front panel	Tactile keypad, 6 keys (Up/Down, Left/Right, Enter/Clear) Vacuum Fluorescent Display (blue) - 2 lines of 24 characters
Loopbacks	Internal IF, digital, and near/far
Fault relays	Hardware fault, Rx and Tx Traffic Alarms
M&C Interface	EIA-232 and EIA-485 (addressable multi-drop) EIA-485 may be either 2-wire or 4-wire RJ-11 Command Line Interface (CLI) for control of IP configuration parameters.
M&C Software	EDMAC software for control of local and distant units
NETWORKING PROTOCOLS [1]	
Address Resolution Protocol (ARP)	Configurable static ARP entries
Internet Protocol (IP)	
Internet Control Message Protocol (ICMP)	
IPv4 Routing	Configurable static routes
Internet Group Management Protocol (IGMP v1 & v2)	
User Datagram Protocol (UDP)	
Transmission Control protocol (TCP)	
Simple Network Management Protocol (SNMP v2)	
Telnet	

Hyper Text Transfer Protocol (HTTP)	
File transfer protocol (FTP)	
OPERATIONS & MAINTENANCE [1]	
Configuration & Management	
Console interface	
SNMP v2	
Private Modem Specific MIB	
SNMP MIB II support	
Telnet	
HTTP	
Remote software / firmware upgrade	
Local software / firmware upgrade	
Traffic statistics	
Faults & alarms	
Configuration backup & restore	
SECURITY	
Password Protection	
CONSOLE / REMOTE CONTROL PORT [1]	
Interface	EIA-232 or EIA-485 (2- or 4-wire)

[1] Not available in CDM-550 mode

MODULATOR	
Transmit Filtering	6th order Butterworth, per IESS 308
Frequency Stability	± 1.5 ppm, 0 to 50º C
Harmonics and Spurious	< -55 dBc/4 kHz
Transmit On/Off Ratio	55 dB minimum
Phase Noise	< 0.24º rms double-sided, 100 Hz to 1 MHz
Output Power	0 to -20 dBm, 0.1dB steps
Accuracy	± 0.5 dB over frequency and temperature
DEMODULATOR	
Input Range	-30 to -60 dBm
Max Composite Level	+35 dBc up to a max of -5 dBm
Acquisition Range	± 1 to ± 30 kHz (1 kHz steps)
Acquisition Time	Depends on data rate, FEC rate and acquisition range

Example:	At 512 kbps, R1/2 QPSK, ± 30 kHz sweep, acquisition time = 0.25 seconds, average		
Clock tracking range	± 100 ppm min.		
BER PERFORMANCE (Met with two adjacent carriers 7 dB higher) Guaranteed Eb/No, in dB (Typical values in parentheses)			
Viterbi	**½**	**¾**	**7/8**
10^{-5}	5.4 (4.9)	6.8 (6.3)	7.7 (7.2)
10^{-6}	6.0 (5.5)	7.4 (6.9)	8.4 (7.9)
10^{-7}	6.7 (6.2)	8.2 (7.7)	9.0 (8.6)
Sequential (64 kbps)	**½**	**¾**	**7/8**
10^{-5}	4.8 (4.2)	5.8 (5.3)	7.0 (6.6)
10^{-6}	5.2 (4.5)	6.4 (5.8)	7.5 (7.2)
10^{-7}	5.6 (4.8)	6.9 (6.3)	8.0 (7.7)
Turbo Product Codec	**3/4(Q)**	**21/44(B)**	**5/16(B)**
10^{-6}	3.9 (3.5)	2.8 (2.5)	2.3 (2.0)
10^{-7}	4.1 (3.7)	3.1 (2.8)	2.6 (2.3)
10^{-8}	4.3 (4.0)	3.3 (3.0)	2.8 (2.5)
Monitor Functions	Eb/No, Frequency Offset, BER, Buffer fill status, coarse AGC value		
ENVIRONMENTAL AND PHYSICAL			
Temperature	Operating: 0 to 50º C		
	Storage: -25 to 70º C		
Power Supply	100 to 240 volts AC, 50/60 Hz		
Power Consumption	22 W typical, 30 W maximum		
Physical Dimensions	1U high, 12” (305 mm) deep		
Weight	7 lbs (3.2 kg)		
CE Approvals	EN55022 Class B (Emissions)		
	EN50082-1 Part 1 (Immunity)		
	EN60950 (Safety)		
FCC Approval	FCC Part 15 Class B		

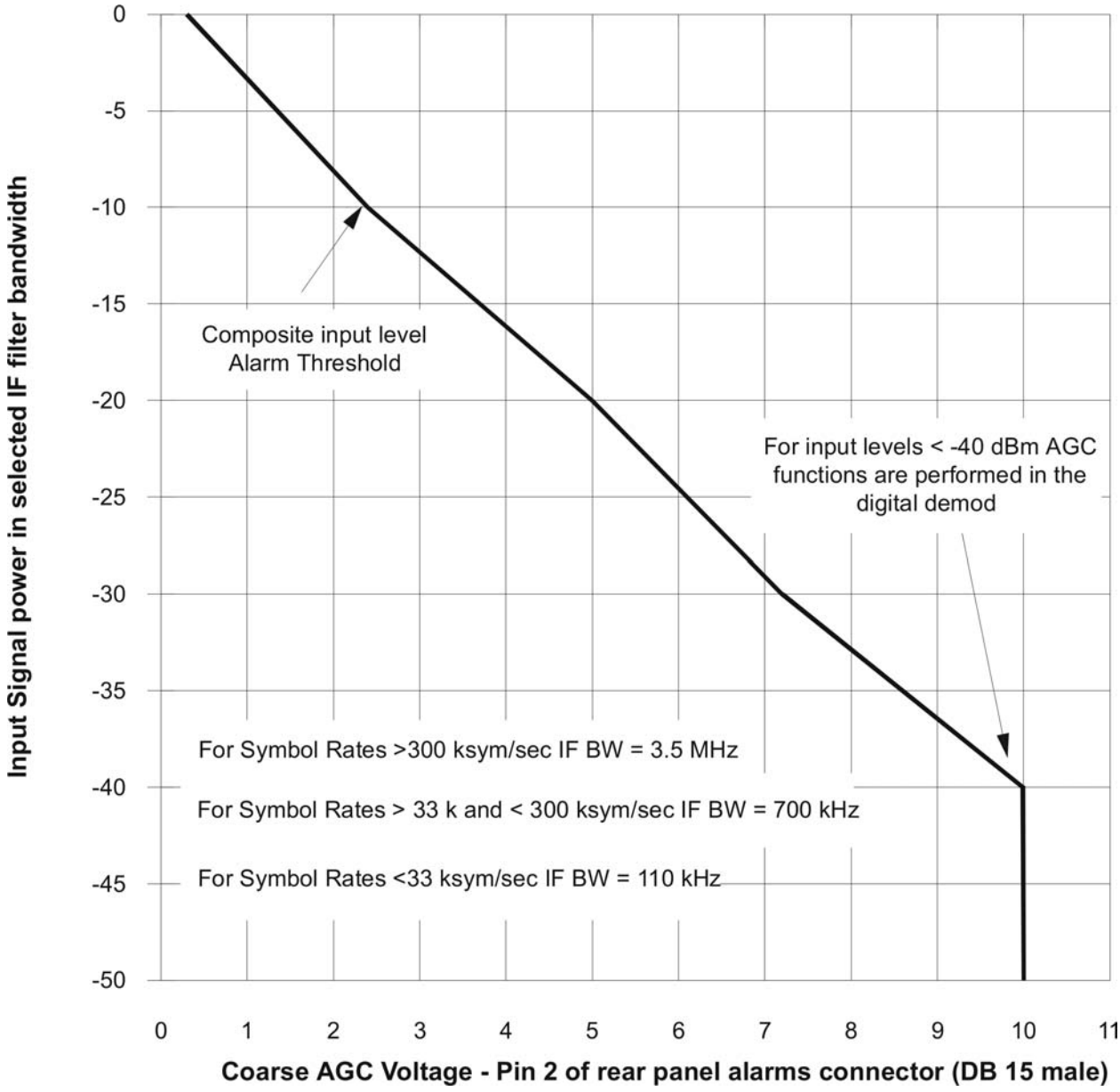


Figure 1-1. Typical Coarse AGC Voltage Characteristic

1.6 DIMENSIONAL ENVELOPE

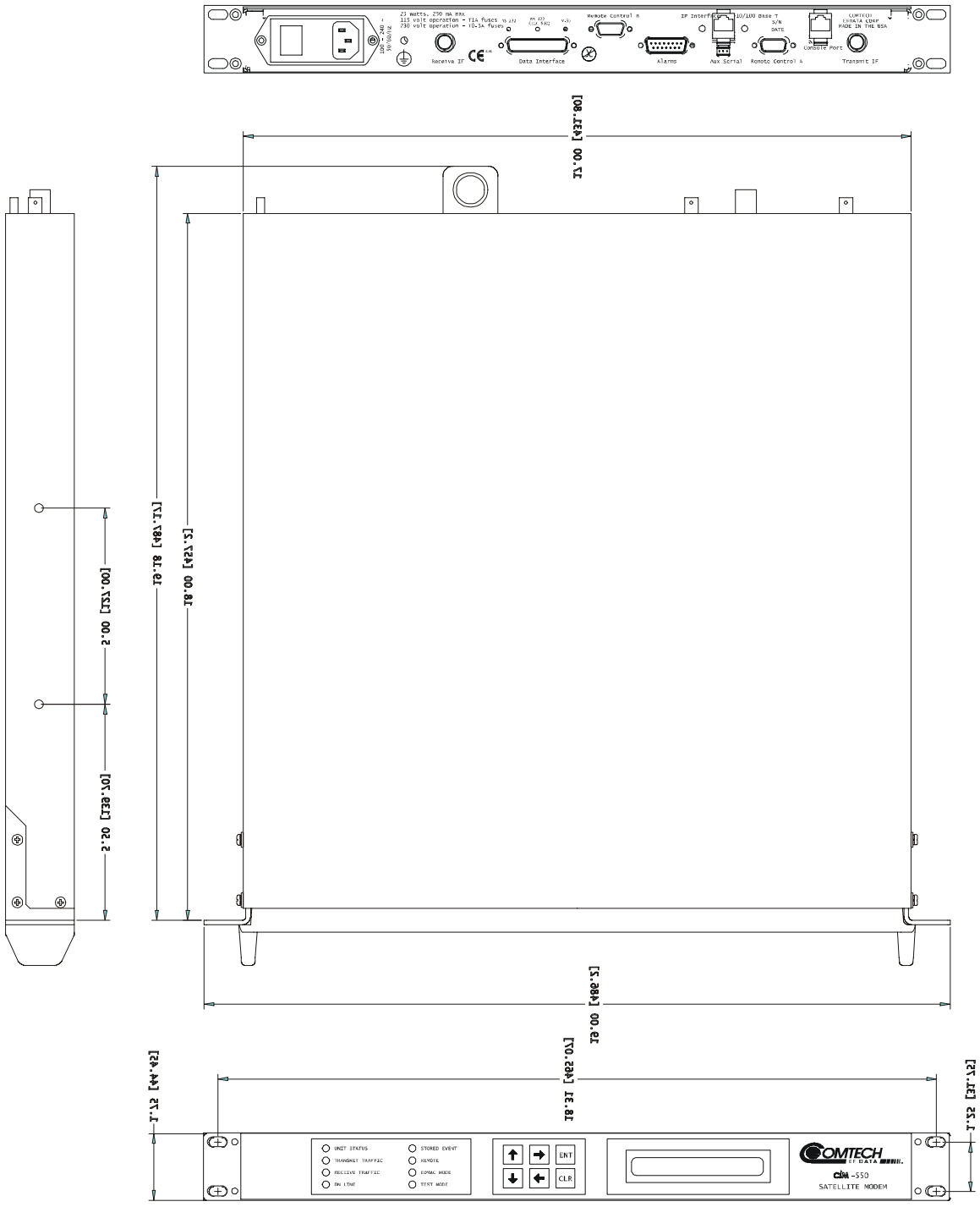


Figure 1-2. Cim-550 Dimensional Envelope

NOTES:

Chapter 2. Installation

2.1 UNPACKING AND INSPECTION

Inspect shipping containers for damage. If shipping containers are damaged, keep them until the contents of the shipment have been carefully inspected and checked for normal operation.

Remove the packing list from the outside of the shipping carton. Open the carton and remove the contents, checking the contents against the packing list. Verify completeness of the shipment and that the unit functions correctly. If damage is evident, contact the carrier and Comtech EF Data immediately and submit a damage report. Keep all shipping materials for the carrier's inspection.

If the unit needs to be returned to Comtech EF Data, please use the original shipping container.

2.2 MOUNTING KITS

If the CiM-550 is to be mounted in a rack, ensure that there is adequate clearance for ventilation. The CiM-550 does not include a cooling fan, so care must be taken that too many units are not mounted on top of each other. The limit is four units, and then a blank 1U panel must be inserted to allow sufficient airflow around the units. In rack systems where there is high heat dissipation, forced air cooling must be provided by top or bottom mounted fans or blowers. Under no circumstance should the highest internal rack temperature be allowed to exceed 50° C.

The CiM-550 is very light - under 7 lbs (3.2 kgs), and very short - 12 ins (305 mm). For this reason, it has not been designed to have rack slides mounted to the side of the chassis. However, Comtech EF Data recommends that some method of support within the rack should be employed, such as rack shelves. If there is any doubt, please consult the factory.

2.3 CONFIGURATION

There are no internal jumpers to configure, no interface cards to install, and no other options to install. All configuration is carried out entirely in software. The unit should first be configured locally, using the front panel keypad and display. The unit will ship with a default 64 kbps, QPSK, Rate 1/2 configuration. Please refer to the 'FRONT PANEL OPERATION' section for details on how to fully configure the unit for the desired operating parameters.

2.4 SELECT INTERNAL IF LOOP

Correct operation of the unit may be verified rapidly, without the need for externally connected equipment. From the top level menu, select TEST, then IF LOOP (refer to the 'FRONT PANEL OPERATION' section) The demod should synchronize, and the green RECEIVE TRAFFIC LED should illuminate. If the unit does not pass this test, call the factory for assistance.

2.5 CONNECT EXTERNAL CABLES

Having verified correct operation in IF loop, enter the desired configuration, and proceed to connect all external cables. If difficulties occur, please call the factory for assistance.

Please note that the modulator gives an output power level in the range 0 to -20 dBm, and the demodulator expects to see a signal in the range -30 to -60 dBm.

2.6 CONNECTOR DESCRIPTION

External cables are attached to connectors on the rear panel of the CiM-550. These comprise the IEC line input connector, the Receive and Transmit IF connectors, the Data connector, Alarms connector, Remote Control connector, and Auxiliary Serial connector. See Appendix K for detailed connector pinouts.

The IEC line input connector contains the ON/OFF switch for the unit. It is also fitted with two fuses - one each for line and neutral connections (or L1, L2, where appropriate). These are contained within the body of the connector, behind a small plastic flap.

- For 230 volt AC operation, use T0.5A, (slow-blow) 20 mm fuses.
- For 115 volt AC operation, use T1A fuses, (slow-blow) 20 mm fuses.

FOR CONTINUED OPERATOR SAFETY, ALWAYS REPLACE THE FUSES WITH THE CORRECT TYPE AND RATING.

IF Ports - The IF port connectors are both a 50 ohm BNC female type. 75 ohm cable connectors (male) will have no problem mating with this 50 ohm type.

Data - The primary Data connector for the CiM-550 is the RJ-45 connector providing the 10/100 BaseT Ethernet interface.

In CDM-550 emulation mode, the Data connector is a 25 pin ‘D’ type female (DB25-F). This connector conforms to the EIA 530 pinout, which allows for connection of different electrical standards, including EIA-422/530, V.35, and EIA-232. Please note that it is the responsibility of the user to provide the appropriate cables to connect to this EIA 530 connector. A shielded 25 pin ‘D’ type provides a very solid solution to EMC problems, unlike the sometimes used V.35 Winchester connector. The pinout for the EIA 530 connector is provided in the next section.

Note that the currently selected interface type is indicated by a small orange LED which is located immediately above the connector. This provides an easy visual indication to anyone mating a connector at the rear of the unit.

Alarms - The Alarms connector is a 15 pin 'D' type male (DB15-M). This provides the user with access to the Form-C relay contacts which indicate the fault status of the unit. These are typically connected to an external fault monitoring system, often found in satellite earth stations. In addition, the receive I and Q demodulator samples are provided on this connector. Connecting these signals to an oscilloscope in X,Y mode will provide the receive signal constellation diagram, which is a useful diagnostic aid. A pin is also provided which can mute the transmit carrier. This requires that the pin be shorted to ground, or a TTL ‘low’, or an EIA-232 ‘high’ signal be applied.

As an aid to antenna pointing, or for driving step-track equipment, an analog AGC signal is provided on a pin of this connector. The demodulator incorporates three separate AGC control loops, one of which is analog, and two of which are entirely digital. The first of these loops keeps the signal level constant at the input to the flash A/D converter in the final IF stage. This loop has a limited dynamic range (~ 35 dB) and operates on the total power within the IF bandwidth (which varies with data rate). The characteristics of this control voltage are shown at the rear of the specifications section.

The pinout details for this connector are provided in the appendices.

Remote Control - The Remote Control connector is a 9 pin 'D' type female (DB9-M). Access is provided to remote control ports of the modem, both EIA-232 and RS485. The pinout details for this connector are provided in the next section.

Console Port – The console port is available for local configuration and management of the Ethernet interface. This port is an EIA-232 port and uses a standard RJ-11.

Auxiliary Serial Port - The Auxiliary Serial connector is an HE1402 3 pin header. A suitable mate for this connector is AMP part number 281838-3, with three crimp pins, AMP part number 182734-2, also required. This is an additional EIA-232 serial port, which is only used when the modem is part of a 1:1 pair. The pinout details for this connector are provided in the next section.

Chapter 3. Operation

3.1 METHODS OF OPERATION

The CiM-550 IP Enabled Modem may be setup and operated using any of the following methods:

User Interface	Connection	Modem Functions	CiM Functions	Reference
Front Panel	Keypad	ALL	IP Address/Subnet only	Chapter 4
Serial Remote Control	Serial RS-232/RS-485 via Remote Control Port B	ALL	IP Address/Subnet only	Chapter 5
Serial Command Line Interface (CLI)	Serial RS-232 via Console Port	ALL	ALL	Chapter 11
Telnet	Ethernet via 10/100 baseT IP interface	ALL	ALL	Chapter 11
Web Server	Ethernet via 10/100 baseT IP interface	ALL	ALL	Chapter 12
SNMP	Ethernet via 10/100 baseT IP interface	ALL	ALL	Chapter 13

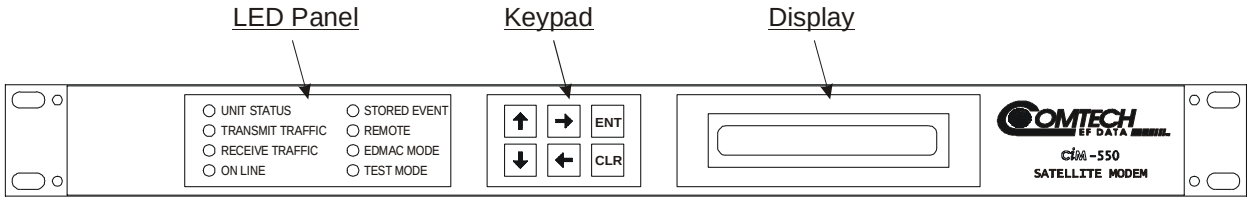


Figure 3-1. Front Panel

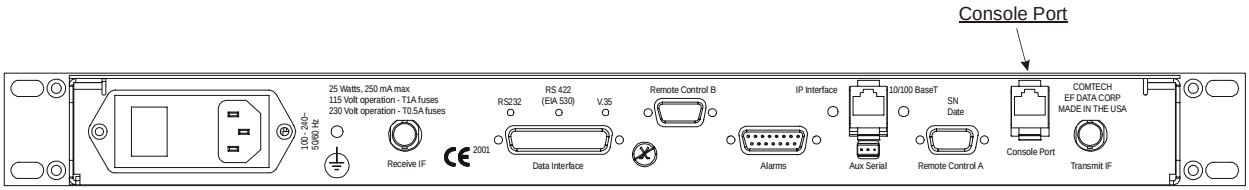


Figure 3-2. Rear Panel

3.1.1 FRONT PANEL OPERATION

The front panel provides a menu driven, easy to operate, user interface that provides control of all modem parameters plus selection of the IP address and network prefix length. On the front panel of the unit, there are a keypad, the Vacuum Fluorescent Display (VFD), and eight LED indicators. The user enters data via the keypad, and messages are displayed on the VFD. The LEDs indicate, in a summary fashion, the status of the unit. Refer to Chapter 4 for detailed operations.

3.1.2 SERIAL REMOTE CONTROL OPERATIONS

The C*i*M-550 modem provides a standard serial (EIA-232, EIA-485 4-wire, or EIA-485 2-wire) interface that can be used only for monitor and control of CiM-550 modem parameters (Monitor and Control of the CiM-550 IP parameters is provided separately via the Console Port interface). Access to this application is provided via the 'Remote Control B' (DB9) port on the back of the modem. Refer to Chapter 5 for detailed operations using this interface.

3.1.3 SERIAL COMMAND LINE INTERFACE (CLI) OPERATIONS

Serial Command Line Interface (CLI) via the RJ-11 'Console Port' The CLI for the CiM-550 has been combined with the Telnet interface. Refer to Chapter 11 for detailed operations using this interface.

3.1.4 TELNET OPERATIONS

The C*i*M-550 modem provides a Telnet interface with an imbedded, easy to use, multiple-level, menu system that can be used to monitor and control **all** CiM-550 modem and IP parameters. Access to this application is provided via the 10/100 Base T IP interface (RJ-45). Refer to Chapter 11 for detailed operations using this interface.

3.1.5 WEB SERVER OPERATION

The C*i*M-550 modem provides an embedded web server application that serves standard HTML web pages that can be used to monitor and control **all** CiM-550 modem and IP parameters. These web pages have been designed for optimal performance when using MicroSoft's Internet Explorer version 5 or higher. Access to this application is provided via the 10/100 Base T IP interface (RJ-45). Refer to Chapter 12 for detailed operations using this interface.

3.1.6 SNMP OPERATIONS

The C*i*M-550 modem supports Simple Network Management Protocol (SNMP) interface that can be used to monitor and control **all** CiM-550 modem and IP parameters. Access to this application is provided via the 10/100 Base T IP interface (RJ-45). Refer to Chapter 13 for detailed operations using this interface.

NOTES:

Chapter 4. Front Panel Menus

4.1 FRONT PANEL OPERATION

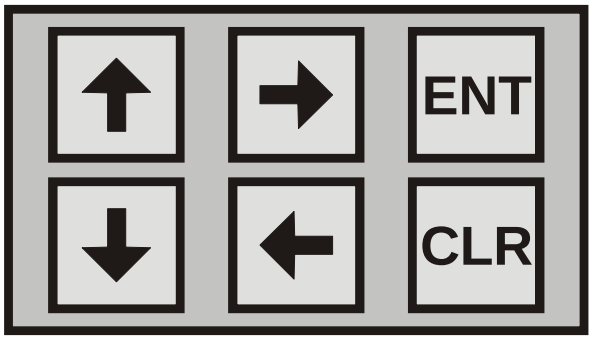
The user can fully control and monitor the operation of the C*i*M-550 modem from the front panel, using the keypad and display. Nested menus are used, which display all available options, and prompt the user to carry out a required action.

The display has two lines each of 24 characters. On most menu screens, the user will observe a flashing solid block cursor, which blinks at a once-per-second rate. This indicates the currently selected item, digit, or field. Where this solid block cursor would obscure the item being edited (for example, a numeric field) the cursor will automatically change to an underline cursor.

If the user were to display the same screen for weeks at a time, the display could become 'burnt' with this image. To prevent this, the unit has a 'screen saver' feature which will activate after 1 hour. The top line of the display will show the Circuit ID (which can be entered by the user) and the bottom line will show the circuit Eb/No value (if the demod is locked) followed by 'Press any key....'. The message moves from right to left across the screen, then wraps around. Pressing any key will restore the previous screen.

4.1.1 KEYPAD

The keypad comprises six individual key switches, mounted directly behind a fully sealed membrane overlay. They have a positive 'click' action, which provides the user with tactile feedback. These six switches are identified as UP ARROW, DOWN ARROW, RIGHT ARROW, LEFT ARROW, ENTER and CLEAR.



Key	Function
RIGHT ARROW	Moves the cursor to the right, when it is displayed.
LEFT ARROW	Moves the cursor to the left, when it is displayed.
UP ARROW	Used for editing the value at the current cursor position, if appropriate. If this is a numeric field, this will increment the value.
DOWN ARROW	Used for editing the value at the current cursor position, if appropriate. If this is a numeric field, this will decrement the value.
ENTER (ENT)	Used to accept an edited entry. Most menus prompt the user to press this key, by displaying the text (PRESS ENTER), (ENTER) or (ENT). This results in the entry being accepted, and the user is then returned to the previous menu.
CLEAR (CLR)	Used to escape from the current operation and return to the previous menu.

Note: The keypad has an auto-repeat feature. If a key is held down for more than 1 second, the key action will repeat, automatically, at the rate of 15 keystrokes per second. This is particularly useful when editing numeric fields, with many digits, such as frequency or data rate.

4.1.2 VACUUM FLUORESCENT DISPLAY (VFD)

The VFD is an active display showing 2 lines, each of 24 characters. It produces a blue light, the brightness of which can be controlled by the user. It has greatly superior viewing characteristics compared to a Liquid Crystal Display (LCD), and does not suffer problems of viewing angle or contrast.

4.1.3 LED INDICATORS

There are 8 LED indicators. The functions of these indicators are shown in the table below.

Table 4-1. Front Panel LED Indicators

LED	Color	Condition
Unit Status	Red	A Unit Fault exists (Example: PSU fault)
	Orange	No Unit Faults, but a Traffic Fault exists
	Green	No Unit Faults, or Traffic Faults
Transmit Traffic	Green	No Tx Traffic Faults
	Off	A Tx Traffic fault exists OR the Tx Carrier is in OFF state
Receive Traffic	Green	No Rx Traffic Faults (demod and Viterbi decoder are locked, everything is OK)
	Off	An Rx Traffic fault exists (the demod may still be OK)
On line	Green	The Unit is On Line, and carrying traffic
	Off	The Unit is Off Line (standby) - forced by externally connected 1:1 or 1:N redundancy system
Stored Event	Orange	There is a Stored Event in the log, which can be viewed from the front panel, or retrieved via the remote control interface
	Off	There are no Stored Events
Remote	Orange	The Unit is in Remote Mode - local monitoring is possible, but no local control
	Off	The Unit is in Local Mode - remote monitoring is possible, but no remote control
EDMAC Mode	Orange	Framing on, EDMAC on, and unit defined as Slave
	Off	Either no EDMAC, EDMAC Master, or Transparent mode is selected
Test Mode	Orange	A Test Mode is selected (Example: IF Loopback)
	Off	There is no Test Mode currently selected

4.1.4 MENU TREE

The following figures show the menu structure of the CiM-550 front panel menu. The detailed screens and menus are described in subsequent paragraphs.

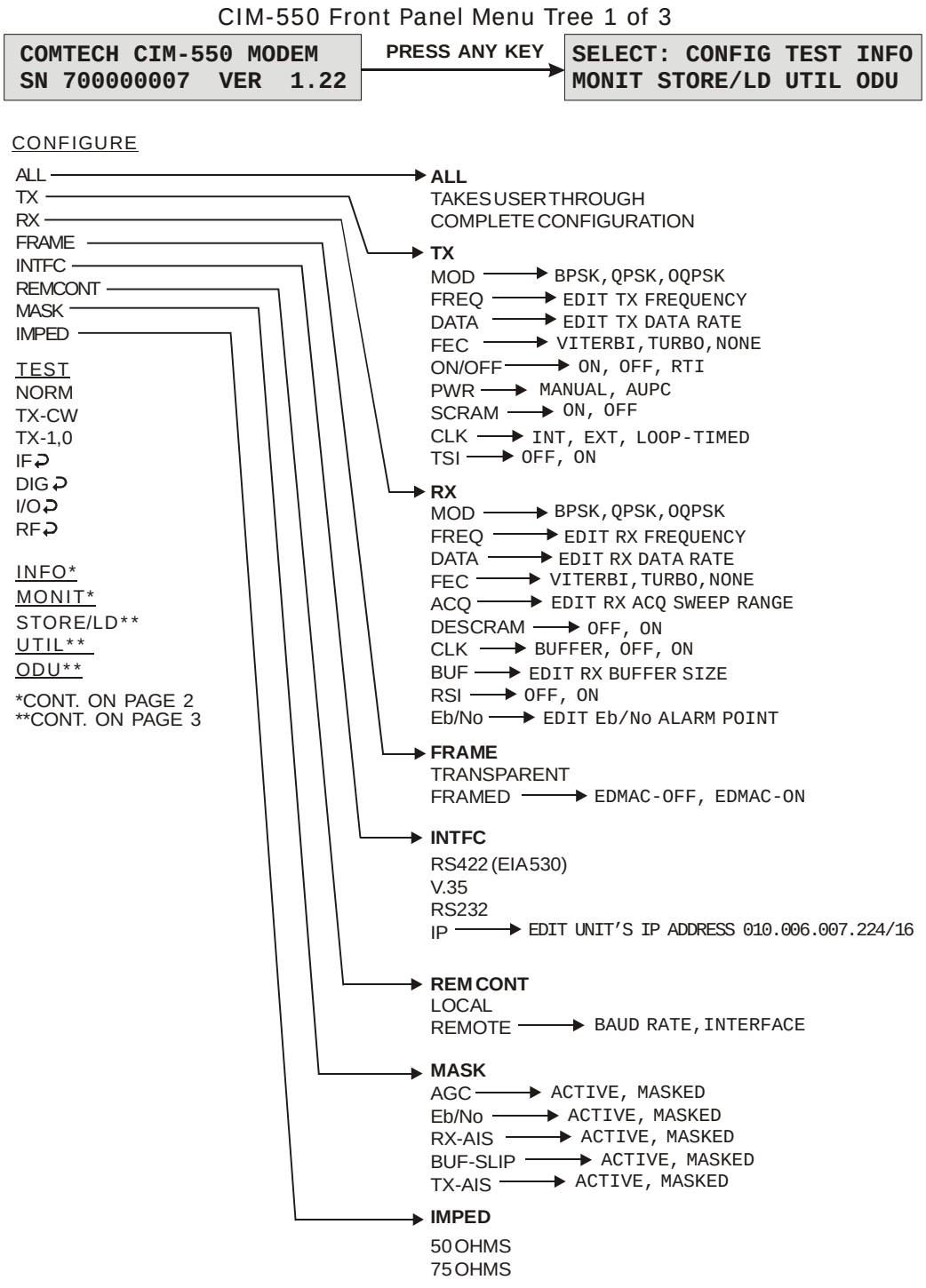


Figure 4-1. Front Panel Modem Menu Tree (1 of 3)

CIM-550 Front Panel Menu Tree 2 of 3

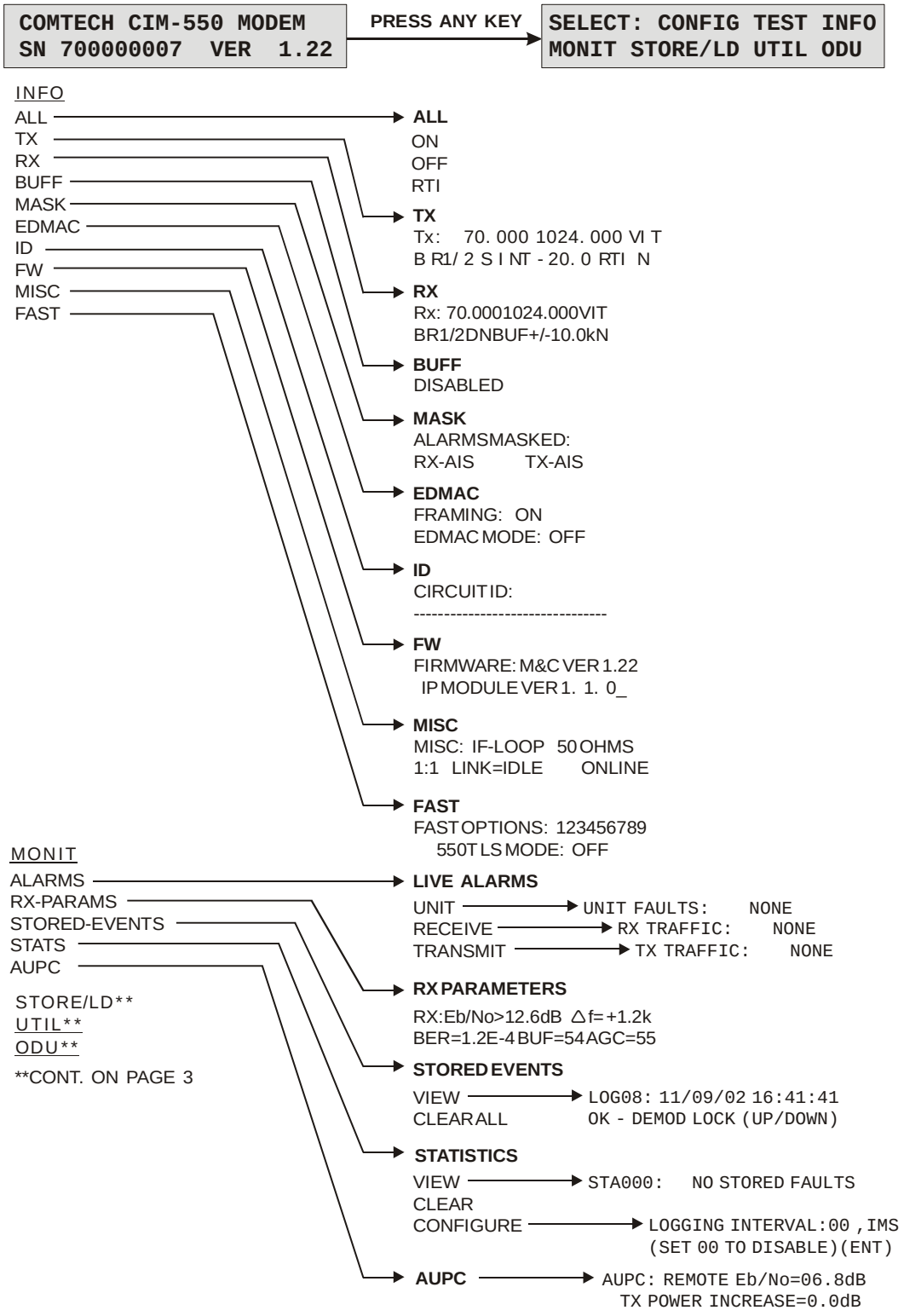


Figure 4-2. Front Panel Modem Menu Tree (2 of 3)

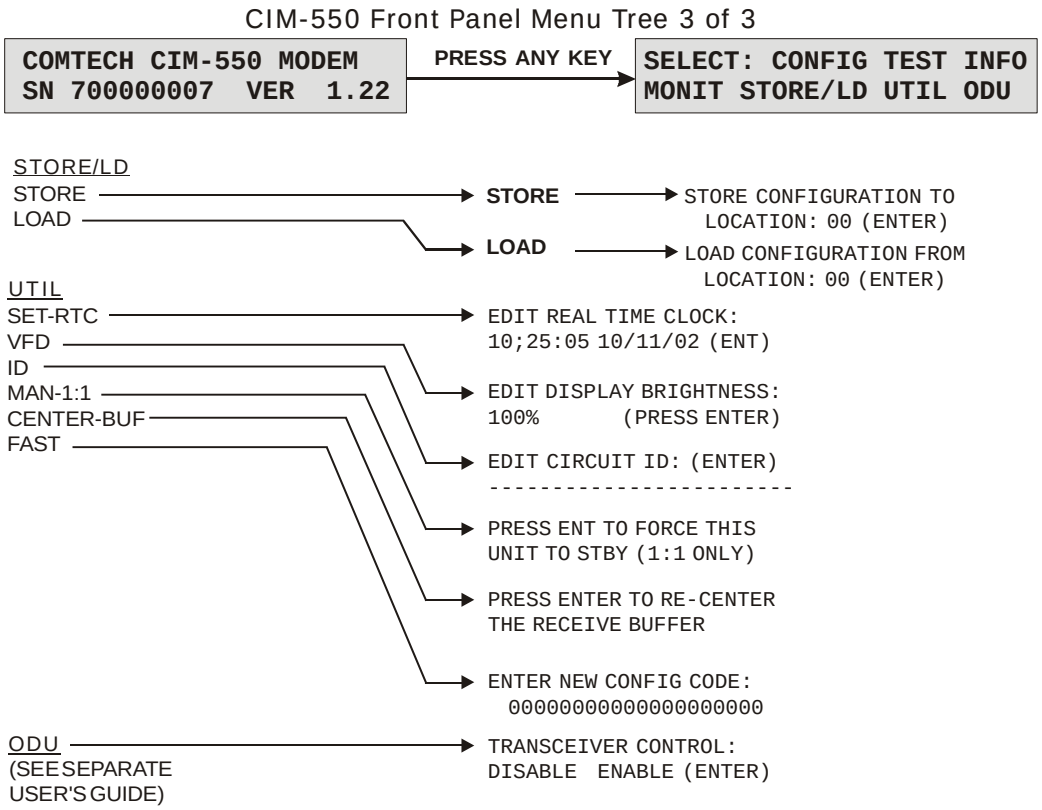


Figure 4-3. Front Panel Modem Menu Tree (3 of 3)

4.1.5 MENU SCREENS

4.1.5.1 OPENING SCREEN

DISPLAY	SELECTIONS/DESCRIPTION
COMTECH CiM-550 MODEM **S/N 1209 S/W VER 1.22**	This is an example of the Opening Screen. Refer to CDM-550 Manual for correct version information. This screen is displayed whenever power is first applied to the unit. Pressing any key will take the user to the top level selection screen.

4.1.5.2 SELECT

DISPLAY	SELECTIONS/DESCRIPTION
SELECT: CONFIG TEST INFO **MONIT STORE/LD UTIL ODU**	CONFIG - Allows the user to fully configure the unit. TEST - Allows the user invoke one of several test modes (loopbacks, for example). INFO - Allows the user to view information on the unit, without having to go into configuration screens. MONIT - Allows the user to monitor the alarm status of the unit, to view the log of stored events, and to display the Receive Parameters screen. STORE/LD - Allows the user to store and to retrieve up to 10 different modem configurations. UTIL - Allows the user to perform miscellaneous functions, such as setting the Real-time clock, adjusting the display brightness, etc. ODU - Allows the user to monitor and control a Comtech RF Transceiver, if connected

4.1.5.2.1 SELECT\CONFIG

DISPLAY	SELECTIONS/DESCRIPTION
CONFIG: ALL TX RX FRAME INTFC REMCONT MASK IMPED	ALL TX RX The ALL menu sub-branch permits the user to completely configure the unit, being prompted, step by step, to make choices, or edit data. This is highly recommended for new users, as it will clearly demonstrate all the parameters which need to be set.

SELECT\CONFIG\TX

Allows the user to define, on a parameter-by-parameter basis, the transmit configuration of the unit. These menu sub-branches would be used if the user wished to change, for example, just the Transmit frequency.

DISPLAY	SELECTIONS/DESCRIPTION
TX: MOD FREQ DATA FEC ON/OFF PWR SCRAM CLK TSI	

SELECT\CONFIG\TX\MODULATION

DISPLAY	SELECTIONS/DESCRIPTION
SELECT TX MODULATION: BPSK QPSK OQPSK (ENTER)	**Note:** If a TURBO FEC option is selected, the modulation type will be automatically fixed, and the user will be presented with a warning screen.

SELECT\CONFIG\TX\FREQUENCY

DISPLAY	SELECTIONS/DESCRIPTION
EDIT TX FREQUENCY: 72.2345 MHz (PRESS ENT	Select the digit to be edited. Change the value of the digit using the UP/DOWN arrow keys, then press ENTER. The range of frequencies is from 52 – 88 MHz (70 MHz factory option) or 104 – 176 MHz (140 MHz factory option).

SELECT\CONFIG\TX\DATA RATE

DISPLAY	SELECTIONS/DESCRIPTION
EDIT TX DATA RATE: **2048.000 kbps(PRESS ENT)**	Select the digit to be edited. Change the value of the digit using the UP/DOWN arrow keys, then press ENTER. The overall range of data rates is from 2.4 to 2048 kbps. **Note:** The minimum and maximum data rates are dependent on modulation type and FEC encoder rate. If the user changes the modulation or FEC, and the currently selected data rate is then invalid, it will be adjusted automatically.

SELECT\CONFIG\TX\FEC TYPE

DISPLAY	SELECTIONS/DESCRIPTION
SELECT FEC TYPE: VITERBI **SEQUENTIAL NONE (ENTER)**	**Any FEC type except TURBO** If either the Reed-Solomon Codec option or the Turbo Codec option are not installed, this menu will be displayed.
SELECT FEC TYPE: VITERBI **SEQ TURBO NONE (ENTER**	FEC screen displayed if the Turbo Codec option **is** installed.

SELECT FEC ENCODER RATE: **1/2 3/4 7/8 (PRESS ENTER)**	**Note**: If BPSK is selected, only Rate 1/2 is permitted. A warning screen appears if this sub-branch is entered when in BPSK mode.
If the Turbo Codec option is installed, the following menu will be displayed:	
TX TURBO: 3/4-Q 21/44-B **5/16-B 3/4-OQ (ENTER)**	**FEC Rate (Turbo Only)** The Rate 3/4 OQPSK is new for Version 1.19. (For further details, see Appendix G - 'FEC Options'.)

SELECT\CONFIG\TX\ON-OFF

DISPLAY	SELECTIONS/DESCRIPTION
SELECT TX OUTPUT STATE: **ON OFF RTI (ENTER)**	ON OFF RTI*****

*** NEW FEATURE** RTI means RECEIVE/TRANSMIT INHIBIT. When selected, it will prevent the TX carrier from being transmitted, until the demodulator is locked.

To avoid the Tx Carrier from being turned off when the demodulator loses lock for a very short period of time, the demodulator must be unlocked continuously for a period of 10 seconds before the transmit carrier is inhibited. This time interval is fixed and the user cannot change it.

Note: Having this feature enabled does not affect the internal IF loopback feature. But, please be aware that if an external IF loopback is attempted (connecting an external cable from the Tx IF output to the Rx IF input), then this will not work! (The Tx carrier cannot turn on until the demod is locked, and the demod cannot lock, because the Tx output is off. The net result is that the demod will not lock, and the Tx carrier will not turn on.

IMPORTANT

PLEASE USE THE RTI FEATURE WITH EXTREME CARE!.

SELECT\CONFIG\TX\PWR

DISPLAY	SELECTIONS/DESCRIPTION
OUTPUT POWER LEVEL MODE: **MANUAL AUPC (ENTER)**	MANUAL AUPC
EDIT OUTPUT POWER LEVEL: **-20.0 dBm (PRESS ENTER)**	MANUAL display screen Default value is 3.0 dB, and upper limit is 9.9 dB
WARNING! AUTO UPLINK PWR **CONTRL NEEDS FRAMED MODE**	AUPC warning screen is shown if 'Framed Mode' is **not** selected. See SELECT-CONFIG-FRAME menu.
TARGET Eb/No MAX RANGE **ALARM DEMOD-UNLOCK(ENT)**	AUPC screen if 'Framed' mode is selected. ALARM DEMOD UNLOCK
EDIT TARGET MIN Eb/No OF **REMOTE MODEM:9.9dB (ENT**	TARGET Eb/No screen EDIT TARGET Eb/No of the remote modem. Default value is 3.0 dB, and upper limit is 9.9 dB.
EDIT MAX PERMITTED POWER **INCREASE: 1dB (ENTER)**	MAX RANGE screen Default value is 1dB, and upper limit is 9 Db
SELECT ACTION AT MAXIMUM **TX POWER: NONE TX ALARM**	ALARM screen NONE TX

ACTION WHEN REMOTE DEMOD UNLOCKS: NOM-PWR MAX-PWR	DEMOD UNLOCK screen Select the action that will occur if the remote demod is unlocked. NOM-PWR MAX-PWR

SELECT\CONFIG\TX\SCRAM

DISPLAY	SELECTIONS/DESCRIPTION
SELECT TX SCRAMBLING OFF ON (PRESS ENTER)	When Transparent mode is selected, a V.35 scrambler is used. In Framed or Reed-Solomon modes, a frame synchronized scrambler is used.

SELECT\CONFIG\TX\CLK

DISPLAY	SELECTIONS/DESCRIPTION
SELECT TX CLOCKING MODE: INT EXT LOOP-TIMED (ENT)	INT EXT LOOP-TIMED

INTERNAL - indicates that the CiM-550 will supply a clock to the DTE, which is derived from its internal high-stability source.

EXTERNAL - indicates that the CiM-550 expects to receive a clock from the DTE, to which the unit can phase-lock its internal circuits.

LOOP-TIMED - indicates that the transmit timing source should be the receive clock, from the direction of the satellite. This is a useful mode, in that no external connection needs to be made in this mode. If the demodulator loses lock, or if there is no receive signal present, the internal clock is substituted. Note also that this mode will work even with asymmetric RX and TX data rates.

SELECT\CONFIG\TX\TSI

DISPLAY	SELECTIONS/DESCRIPTION
SELECT TRANSMIT SPECTRAL INVERSION: OFF ON(ENTER)	TSI - Transmit Spectral Interval ON OFF When in the ON position, and QPSK is selected, the transmit spectrum is inverted (which is the same as reversing the direction of phase rotation in the modulator). In BPSK, the time-order of bits out of the FEC encoder is reversed, to make the modem compatible with certain other manufacturer's modems.

4.1.5.2.2 SELECT\CONFIG\RX

DISPLAY	SELECTIONS/DESCRIPTION
RX: MOD FRQ DATA FEC ACQ DESCRAM CLK BUF RSI Eb/No	

SELECT\CONFIG\RX\MOD

DISPLAY	SELECTIONS/DESCRIPTION
SELECT RX MODULATION: BPSK QPSK OQPSK (ENTER)	BPSK QPSK OQPSK **Note:** If a TURBO FEC option is selected, the demodulation type will be automatically fixed, and the user will be presented with a warning screen.

SELECT\CONFIG\RX\FRQ

DISPLAY	SELECTIONS/DESCRIPTION
EDIT RX FREQUENCY: 72.2345 MHz (PRESS ENT)	The range is 52 - 88 MHz (70 MHz factory option) or 104 - 176 MHz (140 MHz factory option).

SELECT\CONFIG\RX\DATA

DISPLAY	SELECTIONS/DESCRIPTION
EDIT RX DATA RATE: **64.000 kbps (PRESS ENT)**	The range is 2.4 to 2048 kbps. **Note:** The minimum and maximum data rates are dependent on modulation type and FEC decoder rate. If the user changes the modulation or FEC, and the currently selected data rate is then invalid, it will be adjusted automatically.

SELECT\CONFIG\RX/FEC

DISPLAY	SELECTIONS/DESCRIPTION
SELECT FEC TYPE: VITERBI **SEQUENTIAL NONE (ENTER)**	**Any FEC type except TURBO** If either the Reed-Solomon Codec option or the Turbo Codec option are not installed, this menu will be displayed. VITERBI SEQUENTIAL NONE
SELECT FEC TYPE: VITERBI **SEQ TURBO NONE (ENTER**	FEC screen displayed if the Turbo Codec option **is** installed. VITERBI SEQ TURBO NONE

SELECT FEC ENCODER RATE: **1/2 3/4 7/8 (PRESS ENTER)**	**Note**: If BPSK is selected, only Rate 1/2 is permitted. A warning screen appears if this sub-branch is entered when in BPSK mode.
If the Turbo Codec option is installed, the following menu will be displayed:	
TX TURBO: 3/4-Q 21/44-B **5/16-B 3/4-OQ (ENTER)**	**FEC Rate (Turbo Only)** The Rate 3/4 OQPSK is new for Version 1.19. (For further details, see Appendix G - 'FEC Options'.)

SELECT\CONFIG\RX\ACQ

DISPLAY	SELECTIONS/DESCRIPTION
EDIT RX ACQ SWEEP RANGE: **+/- 25 kHz (PRESS ENTER)**	The range is +/- 1 kHz to +/- 30 kHz. The value entered here determines the amount of frequency uncertainty the demodulator will sweep over in order to find and lock to an incoming carrier. When operating at low bit rates, large values of sweep range (compared to the data rate) will cause excessively long acquisition times. For example: selecting +/- 30 kHz with a data rate of 2.4 kbps, BPSK, will result in an average acquisition time of around 5 minutes.

SELECT\CONFIG\RX\DESCRAM

DISPLAY	SELECTIONS/DESCRIPTION
SELECT RX DE-SCRAMBLING: **ON OFF (PRESS ENTER)**	When Transparent mode is selected, a V.35 descrambler is used. In Framed mode, a frame-synchronized descrambler is used. It is recommended that scrambling/descrambling be used at all times.

SELECT\CONFIG\RX\CLK

DISPLAY	SELECTIONS/DESCRIPTION
SELECT RX CLOCKING MODE: **BUFFER ON OFF(PRESS ENT)**	When OFF is selected, the Plesiochronous/Doppler buffer is disabled. The receive clock will then be derived from the satellite signal, and will therefore be subject to clock offsets relative to the local transmit clock, and a small amount (< 5%) clock jitter, due to the demodulation bit-timing recovery process at low values of Eb/No. When ON is selected, the Plesiochronous/Doppler buffer is enabled. The input to the buffer will be the signal from the satellite, with any clock offsets and jitter. The output from the buffer will be derived from the local TRANSMIT clock. In this way, the receive data will be perfectly synchronous with this local clock. The CiM-550 can be operated with independent transmit receive and transmit data rates. Even in this configuration, where RX data rate <> TX data rate, the output clock for the buffer will be phase locked to the transmit clock.

SELECT\CONFIG\RX\BUF

DISPLAY	SELECTIONS/DESCRIPTION
EDIT RX BUFFER SIZE: **+/-4096 BITS (PRESS ENT)**	Edit the size, in bits of the Plesiochronous/Doppler Buffer. Values of +/- 256, 512, 1024, 2048 and 4096 bits are possible. If the buffer is disabled, a warning message will be displayed if this screen is entered.

SELECT\CONFIG\RX\RSI

DISPLAY	SELECTIONS/DESCRIPTION
SELECT RECEIVE SPECTRAL **INVERSION: OFF ON(ENTER)**	This should normally be in the OFF position. When in the ON position, the receive spectrum is inverted (which is the same as reversing the direction of phase rotation in the demodulator). Note that in BPSK mode, the demodulator will automatically synchronize to either the normal time-ordering of bits FEC codeword pairs, or the inverted ordering used by certain other manufacturers.

SELECT\CONFIG\RX\Eb/No

DISPLAY	SELECTIONS/DESCRIPTION
EDIT Eb/No ALARM POINT: **2.0 dB (PRESS ENTER)**	The range of values is from 2.0 to 16.0 dB. The user may select a value here, and if the Eb/No falls below this value, a receive traffic fault will be generated.

4.1.5.2.3 SELECT\CONFIG\FRAME

DISPLAY	SELECTIONS/DESCRIPTION
SELECT FRAMING MODE: **TRANSPARENT FRAMED (ENT)**	TRANSPARENT - No framing is selected. No overhead is added, and the unit will be compatible with other manufacturer's equipment, when operating in a 'standard' configuration (IESS 308 filtering, V.35 scrambling, Viterbi).

SELECT\CONFIG\FRAMED

DISPLAY	SELECTIONS/DESCRIPTION
SELECT FRAMING OPTION: **EDMAC-OFF EDMAC-ON (ENT)**	Embedded Distant-end Monitor And Control is enabled or disabled in this sub-menu. If EDMAC-OFF is selected then none of the EDMAC features are available, even though framing will still be enabled. If EDMAC-ON is selected, the user is further prompted to select whether the unit is an EDMAC master, or an EDMAC slave:
SELECT EDMAC MODE: **MASTER SLAVE (ENTER)**	An EDMAC MASTER is a unit which is local to the M&C computer, and which passes messages, via the overhead, to a distant-end modem. An EDMAC SLAVE is a unit which is not local to the M&C computer, which is at the distant-end of a satellite link.
EDIT DISTANT-END'S ADDR: **0240 (SEE HANDBOOK)(ENT)**	(FRAMED/ON) EDMAC MASTER Edit the address of the distant-end modem which this unit will pass messages to. There is a restriction on values which can be entered here - they may only be in increments of 10. This is automatically taken care of - the user may not edit the last digit of the address. This has been implemented so that a single MASTER may pass messages for up to 10 devices at the distant end. The valid range of addresses is from 10 to 9990.

EDIT THIS UNIT'S ADDRESS **0245 (SEE HANDBOOK)(ENT)**	(FRAMED/ON) EDMAC SLAVE The valid range of addresses is from 1 to 9999, although 'base 10' values will be automatically skipped. Remember that this is a unit which is intended to be located at the distant-end of a link, and will therefore be under the control of a MASTER at the other end. This is the equivalent of putting the unit into Remote Control mode - no local control is possible.

4.1.5.2.4 SELECT\CONFIG\INTFC

DISPLAY	SELECTIONS/DESCRIPTION
DATA INTERFACE: EIA-422/530 **V.35 EIA-232 IP (ENTER)**	EIA-422/530 V.35 EIA-232 IP **Note:** Selecting either EIA-422/530, V.35, or EIA-232 as the interface rather than IP will change the CiM-550 to CDM-550 emulation mode. The CiM-550 will then pass standard serial traffic, like a CDM-550, but will not pass IP traffic. The CiM can still be accessed via the ethernet port using Telnet, HTTP, or SNMP. If the user selects IP, the following screen is displayed:
EDIT UNIT'S IP ADDRESS: **010.006.007.224/16 (ENT)**	

4.1.5.2.5 SELECT\CONFIG\REMCONT

DISPLAY	SELECTIONS/DESCRIPTION
SELECT REMOTE CONTROL: LOCAL REMOTE (PRESS ENT)	LOCAL REMOTE If LOCAL is selected then remote control will be disabled. Remote monitoring is still possible. If REMOTE is selected AND If the unit has not been defined as an EDMAC SLAVE then the following sub-menu will be displayed:

SELECT\CONFIG\REMCONT\REMOTE

DISPLAY	SELECTIONS/DESCRIPTION
REMOTE CONTROL: BAUDRATE INTERFACE (PRESS ENTER)	BAUDRATE INTERFACE

EDIT LOCAL BUS BAUDRATE: 19200 BAUD FORMAT 8-N-1	BAUDRATE screen Edit the baud rate of the remote control bus, connected locally to the M&C computer. Selections are 300, 1200, 2400, 4800, 9600 and 19200 baud are possible. FORMAT selectionas are: 8-N-1, 7-E-2, 7-O-2. The asynchronous character format is FIXED at 8 data bits, 1 stop bit, no parity (8-N-1).
SELECT. INTERFACE: EIA-232 EIA485-2W EIA485-4W (ENT)	INTERFACE screen EIA232 EIA485-2W EIA485-4W At this point the user will be further prompted to enter the bus address.

IN EIA-232 MODE THE BUS ADDRESS IS FIXED AT 0000	In EIA-232 mode the bus address is fixed at 0, and this screen is displayed.
EDIT UNIT'S BUS ADDRESS: 0245 (PRESS ENTER)	If either RS485 mode is selected, this screen is displayed. The valid range of addresses is from 1 to 9999.

4.1.5.2.6 SELECT\CONFIG\MASK

DISPLAY	SELECTIONS/DESCRIPTION
ALARM MASK: AGC Eb/No **RX-AIS BUF-SLIP TX-AIS**	AGC Eb/No RX-AIS BUF-SLIP TX-AIS

SELECT\CONFIG\MASK\AGC

DISPLAY	SELECTIONS/DESCRIPTION
SELECT AGC ALARM MASK: **ACTIVE MASKED(PRESS ENT)**	ACTIVE - If the user selects ACTIVE, then a Receive Traffic fault will be generated whenever the demodulator senses that the composite input level being applied will cause compression in the IF stages, and hence degrade the performance of the demodulator. MASKED - If the user selects MASKED, no alarm will be generated.

SELECT\CONFIG\MASK\Eb/No

DISPLAY	SELECTIONS/DESCRIPTION
SELECT Eb/No ALARM MASK: **ACTIVE MASKED(PRESS ENT)**	ACTIVE - If the user selects ACTIVE, then a Receive Traffic fault will be generated whenever the demodulator determines that the Eb/No of the received carrier has fallen below the threshold defined under CONFIG, RX, Eb/No. MASKED – If the user selects MASKED, no alram will be generated.

SELECT\CONFIG\MASK\RX-AIS

DISPLAY	SELECTIONS/DESCRIPTION
SEL RX-AIS ALARM MASK: **ACTIVE MASKED(PRESS ENT)**	ACTIVE - If the user selects ACTIVE, then a Receive Traffic fault will be generated whenever the demodulator senses that the ‘all ones’ condition is present in the receive data. MASKED - If the user selects MASKED, no alarm will be generated.

SELECT\CONFIG\MASK\BUF-SLIP

DISPLAY	SELECTIONS/DESCRIPTION
SEL BUF-SLIP ALARM MASK: **ACTIVE MASKED(PRESS ENT)**	ACTIVE - If the user selects ACTIVE, then a Receive Traffic fault will be generated whenever the receive circuitry senses that the buffer has either underflowed, or overflowed. MASKED - If the user selects MASKED, no alarm will be generated.

SELECT\CONFIG\MASK\TX-AIS

DISPLAY	SELECTIONS/DESCRIPTION
SEL TX-AIS ALARM MASK: **ACTIVE MASKED(PRESS ENT)**	ACTIVE - If the user selects ACTIVE, then a Transmit Traffic fault will be generated whenever the transmit circuitry senses that the 'all ones' condition is present in the transmit data. MASKED - If the user selects MASKED, no alarm will be generated.

4.1.5.2.7 SELECT\CONFIG\IMPED

DISPLAY	SELECTIONS/DESCRIPTION
SELECT IF IMPEDANCE: **50 OHMS 75 OHMS (ENTER)**	50 Ohms 75 Ohms

4.1.5.3 SELECT\TEST

DISPLAY	SELECTIONS/DESCRIPTION
TEST: NORM TX-CW TX-1,0 **IF↻ DIG↻ I/O↻ RF↻ (ENT)**	NORM TX-CW TX-1,0, IF LOOP DIG LOOP I/O LOOP

NORM	(Normal) This clears any test modes or loopbacks, and places the unit back into an operational state.
TX-CW	(Transmit CW) This is a test mode which forces the modulator to transmit a pure carrier (unmodulated).

TX-1,0	(Transmit an alternating 1,0,1,0 pattern) This is a test mode which forces the modulator to transmit a carrier modulated with an alternating 1,0,1,0 pattern, at the currently selected symbol rate. This causes two discrete spectral lines to appear, spaced at +/- half the symbol rate, about the carrier frequency. This mode is used to check the carrier suppression of the Modulator.
IF LOOP	(IF Loopback) This test mode invokes an internal IF loop. This is a particularly useful feature, as it permits the user to perform a quick diagnostic test without having to disturb external cabling. Furthermore, all of the receive configuration parameters are temporarily changed to match those of the transmit side. When NORMAL is again selected, all of the previous values are restored.
DIG LOOP	(Digital Loopback) This test mode invokes a digital loopback, which loops data at the output of the digital FIR filter on the transmit side, back into the Viterbi decoder on the receive side. This tests all of the interface, transmit baseband circuits, FEC encoder, FEC decoder, and buffer.
I/O LOOP	(Inward/Outward loopback) This test mode invokes two distinct loopbacks. The first of these is the inward loop, which takes data being received from the satellite direction, and passes it directly to the modulator. Simultaneously, the outward loop is invoked, whereby data being fed to the transmit data interface is routed directly back out of the receive data interface.

The three loopback modes are illustrated in the following figure.

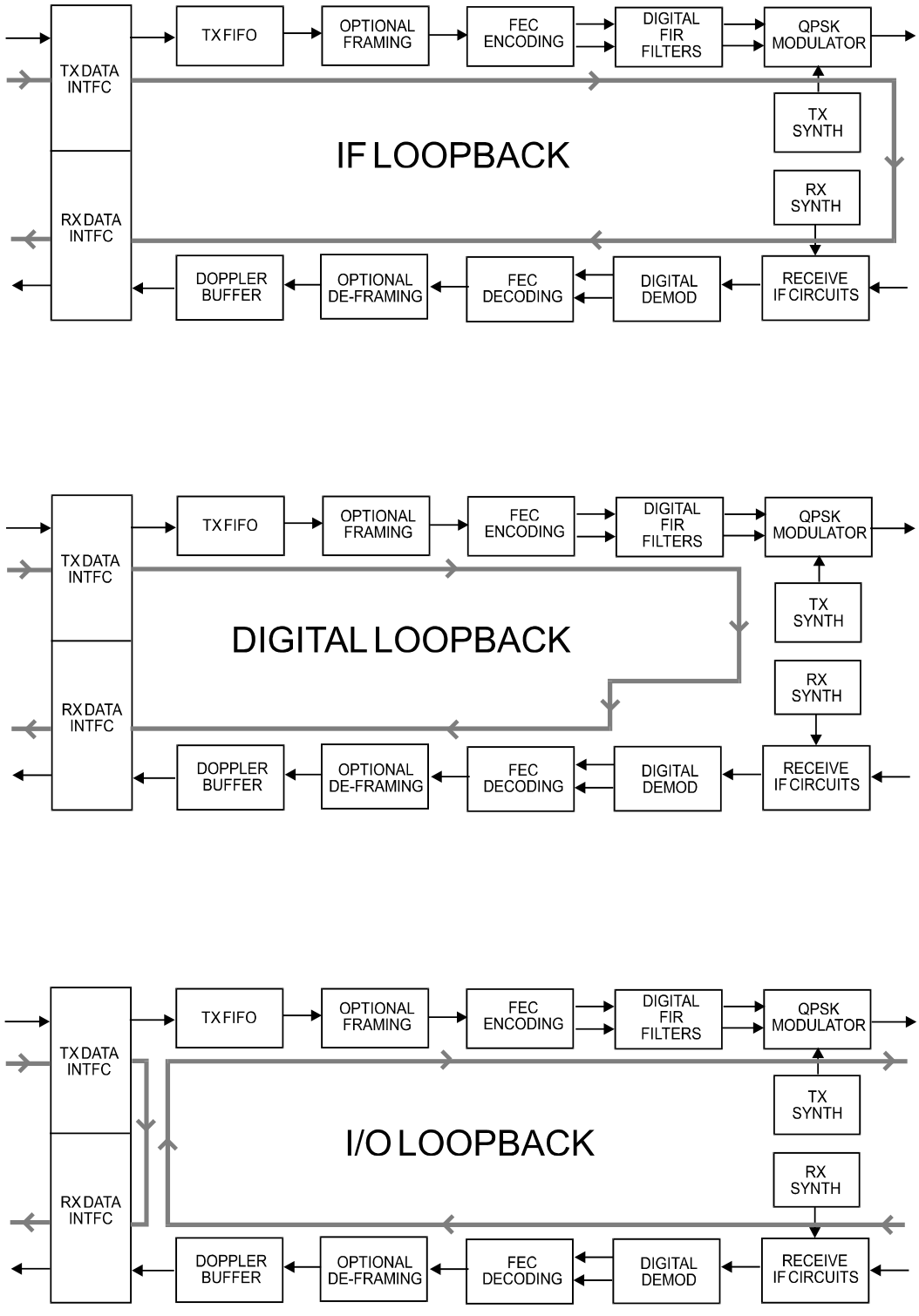


Figure 4-4. Loopback Modes

4.1.6 SELECT\INFO

DISPLAY	SELECTIONS/DESCRIPTION
INFO:ALL TX RX BUFF MASK EDMAC ID FW MISC FAST	ALL TX RX BUFF MASK EDMAC ID FW MISC FAST

4.1.6.1 SELECT\INFO\TX

DISPLAY	SELECTIONS/DESCRIPTION
Tx:140.0000 2048.000 VIT Q R1/2 S LOP -20.0 ON I	

The information displayed here is as follows:

Top line: Transmit Frequency and Data Rate

FEC Encoder type (VIT = Viterbi, SEQ = Sequential,
VRS=Viterbi + Reed-Solomon, SRS=Sequential + Reed Solomon
TUR = Turbo, UNC = uncoded)

Bottom line: Modulation type (Q = QPSK, O= OQPSK, B = BPSK)

Code Rate (shows blank in uncoded mode)
Scrambler state (S = Scrambler on, N = Scrambler off)
Clocking Mode (INT = internal, EXT = external, LOP = loop)
Output power level
Transmit output state (ON = on , OFF = off, EOF = external off)
TSI state (I = Transmit Spectral Inversion on, N = off)

4.1.6.2 SELECT\INFO\RX

DISPLAY	SELECTIONS/DESCRIPTION
Rx: 70.0000 512.000 SEQ **B R3/4 D BUFF +/-23k I**	

The information displayed here is as follows:

Top line: Receive Frequency

Receive Data Rate

FEC Decoder type (VIT = Viterbi, SEQ = Sequential, VRS=Viterbi + Reed-Solomon, SRS=Sequential + Reed Solomon, TUR = Turbo, UNC = uncoded)

Bottom line: Demodulation type (Q = QPSK, O= OQPSK, B = BPSK)

Code Rate (shows blank in uncoded mode)
Descrambler state (D = Descrambler on, N = off)
Clocking Mode
Demod Sweep Acquisition range
RSI state (I = Receive Spectral Inversion on, N = off)

4.1.6.3 SELECT\INFO\BUFF

DISPLAY	SELECTIONS/DESCRIPTION
BUFFER: ENABLED (TX=RX) **SIZE: +/-4096 BITS**	This displays if the buffer is enabled or disabled, shows the exact clocking mode (TX=RX, or TX<> RX), and the buffer size.

4.1.6.4 SELECT\INFO\MASK

DISPLAY	SELECTIONS/DESCRIPTION
ALARMS MASKED: **RX-AIS TX-AIS**	This shows, in the same format as the CONFIG, MASK sub menu, which alarms are currently masked. If an alarm is not masked, a blank is displayed in the relevant screen position.

4.1.6.5 SELECT\INFO\EDMAC

DISPLAY	SELECTIONS/DESCRIPTION
FRAMING: ON **EDMAC MODE: ON (SLAVE)**	This screen shows the framing mode, EDMAC mode, and shows if the unit is an EDMAC MASTER or SLAVE.

4.1.6.6 SELECTINFO\ID

DISPLAY	SELECTIONS/DESCRIPTION
CIRCUIT ID **_____**	This displays the user-defined Circuit ID string, which is entered via the UTIL, ID screen.

4.1.6.7 SELECTINFO\FW

DISPLAY	SELECTIONS/DESCRIPTION
FIRMWARE: M&C VER 1.22 **IP MODULE VER 1. 1. 0_**	

4.1.6.8 SELECT\INFO\MISC

DISPLAY	SELECTIONS/DESCRIPTION
MISC: NORMAL 50 OHMS **1:1 LINK=IDLE ONLINE**	This screen shows the following: Test mode IF impedance 1:1 link status - if the CRS-100 1:1 module is being used, this shows the status of the serial link between the two units. Redundancy status - either online or standby (1:1 or 1:N)

4.1.7 SELECT\MONIT

DISPLAY	SELECTIONS/DESCRIPTION
MONITOR:ALARMS RX-PARAMS **STORED-EVENTS STATS AUPC**	ALARMS RX-PARAMS STORED-EVENTS STATS AUPC

If the user selects ALARMS, the following sub-menu is displayed:

4.1.7.1 SELECT\MONIT\ALARMS

DISPLAY	SELECTIONS/DESCRIPTION
LIVE ALARMS: UNIT **RECEIVE TRANSMIT (ENT)**	UNIT RECEIVE TRANSMIT

4.1.7.1.1 SELECT\MON\ALARMS\UNIT

DISPLAY	SELECTIONS/DESCRIPTION
UNIT FAULT: -12 VOLT PSU **IS UNDER-VOLTAGE**	The screen will indicate if there are any Unit Faults. If not, it will display ‘NONE’.

4.1.7.1.2 SELECT\MONIT\ALARMS\RECEIVE

DISPLAY	SELECTIONS/DESCRIPTION
RX TRAFFIC: AGC ALARM **REDUCE COMPOSITE I/P LVL**	The screen will indicate if there are any Receive Traffic Faults. If not, it will display 'NONE'.

4.1.7.1.3 SELECT\MONIT\ALARMS\TRANSMIT

DISPLAY	SELECTIONS/DESCRIPTION
TX TRAFFIC: NO CLOCK **DETECTED FROM INTERFACE**	The screen will indicate if there are any Transmit Traffic Faults. If not, it will display 'NONE'.

4.1.7.2 SELECT\MONIT\RX-PARAMS

DISPLAY	SELECTIONS/DESCRIPTION
DEMODULATOR **UNLOCKED (ENTER)**	This screen dispalys if the demodulator is unlocked.
RX:Eb/No=05.7dB dF=+11.7k **BER=3.4E-9 BUF=50 AGC=24**	If the demodulator is locked, this screen shows the following:

Eb/No	This shows the value of Eb/No calculated by the demodulator. The value referred to here is the energy per information bit (Ebi), divided by the noise spectral density (No).
dF	The frequency offset of the received carrier, in kHz, with a displayed resolution of 100 Hz.
BER	This is an estimate of the corrected BER.
BUF	(Buffer fill state) This shows the fill state (in percent), of the receive Buffer. After a reset, it will read 50. A value <50 indicates that the buffer is emptying, and >50 indicates that it is filling.
AGC	A number between 0 and 99 indicating the gain setting of the coarse AGC loop in the demod. It has a limited dynamic range, and should not be taken as an accurate measurement of signal level.

4.1.7.3 SELECT\MONIT\STORED-EVENTS

DISPLAY	SELECTIONS/DESCRIPTION
STORED EVENTS: VIEW **CLEAR ALL (PRESS ENTER)**	VIEW CLEAR ALL

4.1.7.3.1 SELECT\MONIT\EVENTS\VIEW

DISPLAY	SELECTIONS/DESCRIPTION
LOG23: 30/11/97 10:37:32 **FT - DEMOD LOCK (UP/DWN)**	The event log can store up to 100 events. When a fault condition occurs, it is time-stamped and put into the log. Similarly, when the fault condition clears, this is also recorded, as shown.
LOG24: 30/11/97 10:37:35 **OK - DEMOD LOCK (UP/DWN)**	

4.1.7.3.2 SELECT\MONIT\STORED-EVENTS\CLEAR ALL

DISPLAY	SELECTIONS/DESCRIPTION
STORED EVENTS: VIEW **CLEAR ALL (PRESS ENTER)**	VIEW CLEAR ALL
MONITOR:ALARMS RX-PARAMS **STORED-EVENTS STATS AUPC**	If the user selects CLEAR ALL, the event log is cleared, and the user is taken directly back to the previous menu. However, if there are faults present on the unit at this time, they will be re-time-stamped, and new log entries will be generated. In accordance with international convention, the date is shown in DAY-MONTH-YEAR format.

4.1.7.4 SELECT\MONIT\STATS

DISPLAY	SELECTIONS/DESCRIPTION
LINK STATISTICS: VIEW **CLEAR CONFIGURE (ENTER)**	VIEW CLEAR CONFIGURE

4.1.7.4.1 SELECT\MONIT\STATS\VIEW

DISPLAY	SELECTIONS/DESCRIPTION
STA198:02/11/00 10:37:32 **16.0,16.0,9.0,9.0(UP/DN)**	VIEW CLEAR ALL The user may scroll backwards or forwards through the entries in the statistics log, using the UP/DOWN arrow keys. The event log can store up to 250 events.

The top line of the display indicates the log entry number, and the time and date of the entry.

Note: In accordance with international convention, the date is shown in DAY-MONTH-YEAR format.

The bottom line of the display shows the statistics data which has been measured and recorded.

The meaning and format of the numbers is as follows:

Minimum Eb/No, Average Eb/No, Maximum TPLI, Average TPLI

(where TPLI means Transmit Power Level increase, if AUPC is enabled).

The user defines a measurement interval (see MONITOR, STATS, CONFIGURE) and during this interval, Eb/No and TPLI are observed, at a one second rate. At the end of this period, the average Eb/No is calculated and recorded, and the minimum value seen in the interval. Similarly, the average TPLI is calculated, along with the highest value seen in the interval.

Notes:
- **a.** If the demod has lost lock during the measurement interval, the minimum Eb/No will show ‘LOSS’ rather than indicate a value. However, the average value (while the demod was locked) will still be calculated and shown. If, on the other hand, the demodulator has been unlocked for the entire measurement interval, the average Eb/No will also show ‘LOSS’. (The display will show ‘LOSS,LOSS’.)
- **b.** If the measured values are greater than, or equal to 16.0 dB, the display will show 16.0 dB.
- **c.** If AUPC is not enabled, the values of maximum and average TPLI will both show ‘0.0'.

Examples:

08.0,13.5,2.5,1.8 means:

- Minimum Eb/No observed in the measurement interval = 8.0 dB
- Average Eb/No observed in the measurement interval = 13.5 dB
- Maximum TPLI observed in the measurement interval = 2.5 dB
- Average TPLI observed in the measurement interval = 1.8 dB

LOSS,04.5,0.0,0.0 means:

- There was a loss of demod lock during the measurement interval
- Average Eb/No observed in the measurement interval = 4.5 dB
- Maximum TPLI observed in the measurement interval = 0 dB
- Average TPLI observed in the measurement interval = 0 dB
  (Which indicates no AUPC activity, or that AUPC is disabled.)

If the user selects CLEAR, the statistics log is cleared, and the user is taken directly back to the previous menu.

4.1.7.4.2 SELECT\MONIT\STATS\CONFIGURE

DISPLAY	SELECTIONS/DESCRIPTION
LOGGING INTERVAL:90 MINS **(SET 00 TO DISABLE)(ENT)**	The user is prompted to enter the logging interval (the period of time over which the statistics will be measured). The user can choose 10, 20, 30, 40, 50, 60, 70, 80, or 90 minutes.

4.1.7.5 SELECT\MONITOR\AUPC

DISPLAY	SELECTIONS/DESCRIPTION
FRAMING NOT ENABLED! **(PRESS ENTER)**	If AUPC is selected, and the modem is not in Framed mode, this menu is displayed.
AUPC: REMOTE Eb/No=14.0dB **TX POWER INCREASE=2.2dB**	If AUPC is selected, and the modem is in Framed mode, this menu is displayed. The top line displays the value of Eb/No of the demodulator at the distant end of the satellite link. The Eb/No will display UNLOCK if the remote demod is unlocked. The bottom line shows how much the AUPC system has increased the output power. If AUPC is not enabled, the value of TX POWER INCREASE will show as 0.0 dB.

4.1.8 SELECT\STORE\LD

DISPLAY	SELECTIONS/DESCRIPTION
STORE/LOAD CONFIG: **STORE LOAD (PRESS ENTER)**	STORE LOAD These sub-menus permit the user to store or load up to 10 different modem configurations in the non-volatile memory of the modem

4.1.8.1 SELECT\STORE/LD\STORE

DISPLAY	SELECTIONS/DESCRIPTION
STORE CONFIGURATION TO **LOCATION: 10 (ENTER)**	Select the location to store the current configuration to, using the UP/DOWN arrow keys, then press ENTER. Locations 1 through 10 are available. If the selected location does not contain a previously stored configuration, the following screen is displayed:
YOUR CONFIGURATION HAS **BEEN STORED! (ENTER)**	If, however, the selected location contains a previously stored configuration, the following screen is displayed:
WARNING!LOC 10 CONTAINS DATA! **OVERWRITE? NO YES**	Selecting YES will overwrite the existing configuration at the selected location.

4.1.8.2 SELECT\STORE/LD\LOAD

DISPLAY	SELECTIONS/DESCRIPTION
LOAD CONFIGURATION FROM **LOCATION: 10 (ENTER)**	Select the location to load a configuration from, using the UP/DOWN arrow keys, then press ENTER. Locations 1 through 10 are available. If the selected location contains valid data, the following screen will be displayed:
THE NEW CONFIGURATION **HAS BEEN LOADED (ENTER)**	If, however, the selected location does not contain valid data, the following screen will be displayed:

WARNING! LOC 10 CONTAINS NO DATA! (ENTER)	

4.1.9 SELECT\UTIL

DISPLAY	SELECTIONS/DESCRIPTION
UTILITY: SET-RTC DISPLAY MAN-1:1 RECENTER-BUF ID	SET-RTC VFD ID MAN-1:1 CENTER-BUF FAST

4.1.9.1 SELECT\UTIL\ \RTC

DISPLAY	SELECTIONS/DESCRIPTION
EDIT REAL TIME CLOCK: 12:00:00 24/04/98 (ENT)	Edit the time and date settings of the real-time clock. This is accomplished by selecting the digit to be edited, using the LEFT/RIGHT arrow keys. The value of the digit is then changed using the UP/DOWN arrow keys. **Note:** In accordance with international convention, the date is shown in DAY-MONTH-YEAR format.

4.1.9.2 SELECT\UTIL\VFD

DISPLAY	SELECTIONS/DESCRIPTION
EDIT DISPLAY BRIGHTNESS: 100% (PRESS ENTER)	100% 75% 50% 25%

4.1.9.3 SELECT\UTIL\MAN-1:1

DISPLAY	SELECTIONS/DESCRIPTION
PRESS ENT TO FORCE THIS UNIT TO STDBY (1:1 ONLY)	If the unit is part of a 1:1 redundant pair of modems, and this unit, is currently on-line, pressing ENTER will cause the unit to switch to standby.

4.1.9.4 SELECT\UTIL\RECENTER-BUF

DISPLAY	SELECTIONS/DESCRIPTION
PRESS ENTER TO RE-CENTER THE RECEIVE BUFFER	Pressing ENTER will cause a forced re-centering of the Plesiochronous/Doppler buffer.

4.1.9.5 SELECT\UTIL\ID

DISPLAY	SELECTIONS/DESCRIPTION
EDIT CIRCUIT ID: (ENTER) THIS IS A TEST MESSAGE	Only the bottom line is available (24 characters). The cursor selects the position on the bottom line (LEFT/RIGHT) and the character is then edited (UP/DOWN). The following characters are available: Space ( ) * + - , . / 0-9 and A-Z. When the user has composed the string, press ENTER.

4.1.10 SELECT\ODU

DISPLAY	SELECTIONS/DESCRIPTION
TRANSCEIVER CONTROL: DISABLE ENABLE (ENTER)	

Chapter 5. Serial Remote Control

5.1 INTRODUCTION

This section describes the protocol and message command set for remote monitor and control of the CiM-550 Modem.

The electrical interface is either an EIA-485 multi-drop bus (for the control of many devices) or an EIA-232 connection (for the control of a single device), and data is transmitted in asynchronous serial form, using ASCII characters. Control and status information is transmitted in packets, of variable length, in accordance with the structure and protocol defined in later sections.

5.2 EIA-485

For applications where multiple devices are to be monitored and controlled, a full-duplex (or 4-wire plus ground) EIA-485 is preferred. Half-duplex (2-wire plus ground) EIA-485 is possible, but is not preferred.

In full-duplex IA-485 communication there are two separate, isolated, independent, differential-mode twisted pairs, each handling serial data in different directions. It is assumed that there is a ‘controller’ device (a PC or dumb terminal), which transmits data, in a broadcast mode, via one of the pairs. Many ‘target’ devices are connected to this pair, which all simultaneously receive data from the controller. The controller is the only device with a line-driver connected to this pair - the target devices only have line-receivers connected.

In the other direction, on the other pair, each target has a tri-state line driver connected, and the controller has a line-receiver connected. All the line drivers are held in high-impedance mode until one (and only one) target transmits back to the controller.

Each target has a unique address, and each time the controller transmits, in a framed ‘packet’ of data, the address of the intended recipient target is included. All of the targets receive the packet, but only one (the intended) will reply. The target enables its output line driver, and transmits its return data packet back to the controller, in the other direction, on the physically separate pair.

EIA 485 (full duplex) summary:

- Two differential pairs - one pair for controller to target, one pair for target to controller.
- Controller-to-target pair has one line driver (controller), and all targets have line-receivers.
- Target-to-controller pair has one line receiver (controller), and all targets have tri-state drivers.

5.3 EIA-232

This a much simpler configuration in which the controller device is connected directly to the target via a two-wire-plus-ground connection. Controller-to-target data is carried, via EIA-232 electrical levels, on one conductor, and target-to-controller data is carried in the other direction on the other conductor.

5.4 BASIC PROTOCOL

Whether in EIA-232 or EIA-485 mode, all data is transmitted as asynchronous serial characters, suitable for transmission and reception by a UART. In this case, the asynchronous character format is fixed at 8 data bits, one stop bit, no parity. The baud rate may vary between 50 baud and 19,200 baud.

All data is transmitted in framed packets. The controller is assumed to be a PC or ASCII dumb terminal, which is in charge of the process of monitor and control. The controller is the only device which is permitted to initiate, at will, the transmission of data. Targets are only permitted to transmit when they have been specifically instructed to do so by the controller.

All bytes within a packet are printable ASCII characters, less than ASCII code 127. In this context, the Carriage Return and Line Feed characters are considered printable.

All messages from controller to target require a response (with one exception). This will be either to return data which has been requested by the controller, or to acknowledge reception of an instruction to change the configuration of the target. The exception to this is when the controller broadcasts a message (such as Set time/date) using Address 0, when the target is set to EIA-485 mode.

5.5 PACKET STRUCTURE

Controller-to-target:

Start of Packet	Target Address	Address De-limiter	Instruction Code	Code Qualifier	Optional Arguments	End of Packet
< ASCII code 60 (1 character)	(4 characters)	/ ASCII code 47 (1 character)	(3 characters)	= or ? ASCII code 61 or 63 (1 character)	(n characters)	Carriage Return ASCII code 13 (1 character)

Example: <0135/TFQ=70.2345{CR}

Target-to-controller:

Start of Packet	Target Address	Address De-limiter	Instruction Code	Code Qualifier	Optional Arguments	End of Packet
> ASCII code 62 (1 character)	(4 characters)	/ ASCII code 47 (1 character)	(3 characters)	=, ?, !, or * ASCII code 61, 63, 33 or 42 (1 character)	(From 0 to n characters)	Carriage Return, Line Feed ASCII code 13,10 (2 characters)

Example: >0654/RSW=32{CR}{LF}

Each of the components of the packet is explained below.

5.5.1 START OF PACKET

Controller to Target: This is the character '<' (ASCII code 61)

Target to Controller: This is the character '>' (ASCII code 62)

Because this is used to provide a reliable indication of the start of packet, these two characters may not appear anywhere else within the body of the message.

5.5.2 ADDRESS

Up to 9,999 devices can be uniquely addressed. In EIA-232 applications this value is set to 0. In EIA-485 applications, the permissible range of values is 1 to 9999. It is programmed into a target unit using the front panel keypad.

IMPORTANT

The controller sends a packet with the address of a target - the destination of the packet. When the target responds, the address used is the same address, to indicate to the controller the source of the packet. The controller does not have its own address.

5.5.3 INSTRUCTION CODE

This is a three-character alphabetic sequence which identifies the subject of the message. Wherever possible, the instruction codes have been chosen to have some significance. For example TFQ for transmit frequency, RMD for receive modulation type, etc. This aids in the readability of the message, should it be displayed in its raw ASCII form. Only upper case alphabetic characters may be used (A-Z, ASCII codes 65 - 90).

5.5.4 INSTRUCTION CODE QUALIFIER

This is a single character which further qualifies the preceding instruction code.

Code Qualifiers obey the following rules:

1) From Controller to Target, the only permitted values are:
   = (ASCII code 61)
   ? (ASCII code 63)

They have these meanings:

The '=' code (controller to target) is used as the assignment operator, and is used to indicate that the parameter defined by the preceding byte should be set to the value of the argument(s) which follow it.

For example, in a message from controller to target, TFQ=070.0000 would mean 'set the transmit frequency to 70 MHz.

The '?' code (controller to target) is used as the query operator, and is used to indicate that the target should return the current value of the parameter defined by the preceding byte.

For example, in a message from controller to target, TFQ? would mean 'return the current value of the transmit frequency.

2) From Target to Controller, the only permitted values are:
   = (ASCII code 61)
   ? (ASCII code 63)
   ! (ASCII code 33)
   * (ASCII code 42)

They have these meanings:

The '=' code (target to controller) is used in two ways:

First, if the controller has sent a query code to a target (for example TFQ?, meaning 'what's the Transmit frequency?'), the target would respond with TFQ=xxx.xxxx, where xxx.xxxx represents the frequency in question.

Second, if the controller sends an instruction to set a parameter to a particular value, then, providing the value sent in the argument is valid, the target will acknowledge the message by replying with TFQ= (with no message arguments).

The ? code (target to controller) is only used as follows:

If the controller sends an instruction to set a parameter to a particular value, then, if the value sent in the argument is not valid, the target will acknowledge the message by replying (for example) with TFQ? (with no message arguments). This indicates that there was an error in the message sent by the controller.

The * code (target to controller) is only used as follows:

If the controller sends an instruction to set a parameter to a particular value, then, if the value sent in the argument is valid, BUT the modem will not permit that particular parameter to be changed at that time, the target will acknowledge the message by replying (for example) with TFQ* (with no message arguments).

The ! code (target to controller) is only used as follows:

If the controller sends an instruction code which the target does not recognize, the target will acknowledge the message by echoing the invalid instruction, followed by the ! character with. Example: XYZ!

5.5.5 MESSAGE ARGUMENTS

Arguments are not required for all messages. Arguments are ASCII codes for the characters 0 to 9 (ASCII 48 to 57), period (ASCII 46) and comma (ASCII 44).

5.5.6 END OF PACKET

Controller to Target: This is the ‘Carriage Return’ character (ASCII code 13)

Target to Controller: This is the two-character sequence ‘Carriage Return’, ‘Line Feed’. (ASCII code 13, and code 10.)

Both indicate the valid termination of a packet.

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
Tx Frequency	TFQ=	8 bytes	Command or Query. Tx Frequency, 52 MHz to 88 MHz, (70 MHz band) or 104 MHz to 176 MHz, (140 MHz band). Resolution = 100Hz. Example: TFQ=072.9876 (70 MHz option) TFQ=148.0000 (140 MHz option) Note: Querying 'Options Fitted' (using EID?) will indicate if the unit is 70 MHz or 140 MHz IF band	TFQ= (message ok) TFQ? (received ok, but invalid arguments found) TFQ* (message ok, but not permitted in current mode)	TFQ?	TFQ=xxx.xxxx (same format as command arguments)
Tx Data Rate	TDR=	8 bytes	Command or Query. Tx Data rate, in kbps, between 2.4 kbps and 2048 kbps. Resolution = 1 bps. Example: TDR=2047.999 (which is 2047.999 kbps)	TDR= (message ok) TDR? (received ok, but invalid arguments found) TFQ* (message ok, but not permitted in current mode)	TDR?	TDR=xxxx.xxx (same format as command arguments)
Tx FEC Type	TFT=	1 byte, value of 1,2,3 or 4	Command or Query. Tx FEC coding type, where: 0 = None (uncoded - no FEC) 1 = Viterbi 2 = Sequential 3 = Viterbi + Reed-Solomon 4 = Sequential + Reed-Solomon 5 = Rate 3/4 QPSK Turbo (S/W Version < 1.15) 6 = Rate 21/44 BPSK Turbo (S/W Version > 1.14) 7 = Rate 5/16 BPSK Turbo (S/W Version > 1.14) All other codes invalid. Example: TFT=1 (which is Viterbi coding) Note: If the RS Codec option is not installed, and the argument 3 or 4 is used, the target will return	TFT= (message ok) TFT? (received ok, but invalid argument found) TFT* (message ok, but not permitted in current mode)	TFT?	TFT=x (same format as command arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			TFT? If the Turbo Codec option is not installed, and the argument 5 is used, the target will return TFT? Use EID? to query the options fitted.			
Tx FEC Code Rate	TCR=	1 byte, value of 1,3 or 7	Command or Query. Tx FEC Code rate, where: 1 = Rate 1/2 3 = Rate 3/4 (must be set for Rate 3/4 Turbo) 7 = Rate 7/8 8 = Rate 21/44 (must set for Rate 21/44 Turbo)* 9 = Rate 5/16 (must set for Rate 5/16 Turbo)* All other codes invalid. Example: TCR=1 (which is Rate 1/2) * Only valid for S/W > 1.14 and EID =5500xx As a Query, returns 0 if Uncoded is selected for FEC	TCR= (message ok) TCR? (received ok, but invalid argument found) TCR* (message ok, but not permitted in current mode - for example if Turbo is selected, and either 1/2 or 7/8 is set)	TCR?	TCR=x (same format as command argument)
Tx Modulation Type	TMD=	1 byte, value of 1 or 2 or 3	Command or Query. Tx Modulation type, where: 1 = BPSK (must be set for Rate 21/44 or 5/16 Turbo) 2 = QPSK (must be set for Rate 3/4 Turbo operation) 3 = OQPSK All other codes invalid. Example: TMD=2 (which is QPSK)	TMD= (message ok) TMD? (received ok, but invalid argument found) TMD* (message ok, but not permitted in current mode)	TMD?	TMD=x (same format as command argument)
Tx Spectrum Invert	TSI=	1 byte, value of 0 or 1	Command or Query. Tx Spectrum Invert selection, where: 0 = Normal,	TSI= (message ok) TSI? (received ok, but invalid arg. found)	TSI?	TSI=x (same format as command argument)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			1 = Tx Spectrum Inverted All other codes invalid. Example:TSI=0 (which is normal)	TSI* (message ok, but not permitted in current mode)		argument)
Tx Scrambler	TSC=	1 byte, value of 0 or 1	Command or Query. Tx Scrambler state, where: 0 = Off 1 = On (V.35 in transparent mode, synchronous in framed mode All other codes invalid. Example: TSC=1 (which is scrambler On)	TSC= (message ok) TSC? (received ok, but invalid argument found) TSQ* (message ok, but not permitted in current mode)	TSC?	TSCS=x (same format as command argument)
Tx Power Level	TPL=	4 bytes	Command or Query. Tx Output power level between 0 and -20 dBm (minus sign assumed). Example: TPL=13.4 (which is -13.4 dBm)	TPL= (message ok) TPL? (received ok, but invalid arguments found) TPL* (message ok, but not permitted in current mode)	TPL?	TPL=xx.x (same format as command arguments)
Tx Clock Source	TCK=	1 byte, value of 1,2 or 3	Command or Query. Tx Clock source, where: 1 = Internal 2 = External 3 = Loop timed (use Rx satellite clock) All other codes invalid. Example: TCK=2 (which is External Clock)	TCK= (message ok) TCK? (received ok, but invalid argument found) TCK* (message ok, but not permitted in current mode)	TCK?	TCK=x (same format as command argument)
Tx Carrier On/Off State	TXO=	1 byte, value of 0, 1 or 2	Command or Query. Tx Carrier On/Off state, where: 0 = Off due to front panel or rem. control command 1 = On	TXO= (message ok) TXO? (received ok, but invalid argument found) TXO* (message ok, but not permitted in current mode)	TXO?	TXO=x (Note that 2 is not a valid argument when used as a

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			2 = Off due to ext H/W Tx Carrier Off command (not a valid argument when used as a command) All other codes invalid. Example: TXO=1 (which is Tx Carrier On)	permitted in current mode)		command)
Rx Frequency	RFQ=	8 bytes	Command or Query. Rx Frequency, 52 MHz to 88 MHz, (70 MHz band) or 104 MHz to 176 MHz (140 MHz band). Resolution = 100 Hz. Example: RFQ=143.4567 (which is 143.4567 MHz) Note: Querying 'Options Fitted' (using EID?) will indicate if the unit is 70 MHz or 140 MHz IF band	RFQ= (message ok) RFQ? (received ok, but invalid arguments found) RFQ* (message ok, but not permitted in current mode)	RFQ?	RFQ=xxx.xxxx (same format as command arguments)
Rx Data Rate	RDR=	8 bytes	Command or Query. Rx Data rate, in bps, between 2.4 kbps and 2048 kbps. Resolution = 1 bps. Example: RDR=002.400 (which is 2.4 kbps)	RDR= (message ok) RDR? (received ok, but invalid arguments found) RDR* (message ok, but not permitted in current mode	RDR?	RDR=xxxx.xxx (same format as command arguments)
Rx FEC Type	RFT=	1 byte, value of 1,2,3 or 4	Command or Query. Rx FEC decoding type, where: 0 = None (uncoded - no FEC) 1 = Viterbi 2 = Sequential 3 = Viterbi + Reed-Solomon 4 = Sequential + Reed-Solomon 5 = Rate 3/4 QPSK Turbo (S/W Version < 1.15) 6 = Rate 21/44 BPSK Turbo (S/W Version > 1.14) 7 = Rate 5/16 BPSK Turbo (S/W Version > 1.14) All other codes invalid. Example: RFT=1 (which is Viterbi coding)	RFT= (message ok) RFT? (received ok, but invalid argument found) RFT* (message ok, but not permitted in current mode)	RFT?	RFT=x (same format as command arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			Note: If the RS Codec option is not installed, and the argument 3 or 4 is used, the target will return RFT? If the Turbo Codec option is not installed, and the argument 5, 6 or 7 is used, the target will return RFT? Use EID? to query the options fitted.			
Rx FEC Code Rate	RCR=	1 byte, value of 1,3 or 7	Command or Query. Rx FEC Code rate, where: 1 = Rate 1/2 3 = Rate 3/4 (must be set for Rate 3/4 Turbo) 7 = Rate 7/8 8 = Rate 21/44 (must set for Rate 21/44 Turbo)* 9 = Rate 5/16 (must set for Rate 5/16 Turbo)* All other codes invalid. Example: RCR=1 (which is Rate 1/2) * Only valid for S/W Version >1.14 As a Query, returns 0 if Uncoded is selected for FEC	RCR= (message ok) RCR? (received ok, but invalid argument found) RCR* (message ok, but not permitted in current mode	RCR?	RCR=x (same format as command argument)
Rx Modulation Type	RMD=	1 byte, value of 1or 2 or 3	Command or Query. Rx Modulation type, where: 1 = BPSK (must be set for Rate 21/44 or 5/16 Turbo) 2 = QPSK (must be set for Rate 3/4 Turbo operation) 3 = OQPSK All other codes invalid. Example: RMD=1 (BPSK)	RMD= (message ok) RMD? (received ok, but invalid argument found) RMD* (message ok, but not permitted in current mode)	RMD?	RMD=x (same format as command argument)
Rx Spectrum Invert	RSI=	1 byte, value of 0 or 1	Command or Query. Rx Spectrum Invert selection, where:	RSI= (message ok) RSI? (received ok,	RSI?	RSI=x (same format as command

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			0 = Normal 1 = Rx Spectrum Inverted All other codes invalid.	but invalid argument found) RSI* (message ok, but not permitted in current mode)		argument)
Rx Descrambler	RDS=	1 byte, value of 0 or 1	Command or Query. Rx De-scrambler state, where: 0 = Off 1 = On (V.35 in unframed mode, synchronous in framed mode All other codes invalid. Example: RDS=1 (which is de-scrambler On)	RDS= (message ok) RDS? (received ok, but invalid argument found) RDS* (message ok, but not permitted in current mode)	RDS?	RDS=x (same format as command argument)
Rx Demod Acq Sweep Width	RSW=	2 bytes, numerical	Command or Query. Rx ± acquisition sweep range of demodulator, in kHz, ranging from ± 1 kHz to ± 30 kHz. Example: RSW=09 (which is 9 kHz)	RSW= (message ok) RSW? (received ok, but invalid arguments found) RSW* (message ok, but not permitted in current mode)	RSW?	RSW=xx (same format as command arguments)
Rx Clock Mode	RCK=	1 byte, value of 0 or 1	Command or Query. Rx Clock mode, where: 0 = Buffer disabled 1 = Buffer enabled All other codes invalid. Example: RCK=0 (which is buffer disable)	RCK= (message ok) RCK? (received ok, but invalid argument found) RCK* (message ok, but not permitted in current mode)	RCK?	RCK=x (same format as command argument)
Eb/No Alarm Point	EBA=	4 bytes, numerical	Command or Query. Eb/No alarm point, with a range of Eb/No between 0 and 16 dB. Resolution 0.1 dB. Example: EBA=12.3 (which is Eb/No = 12.3 dB)	EBA= (message ok) EBA? (received ok, but invalid arguments found)	EBA?	EBA=xx.x (same format as command arguments)
Rx Buffer Size	RBS=	1 byte, value of 1,2,3,4 or 5	Command or Query. Rx buffer size, where:	RBS= (message ok) RBS? (received ok,	RBS?	RBS=x (same format as

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			1 = +/- 256 bits 2 = +/- 512 bits 3 = +/- 1024 bits 4 = +/- 2048 bits 5 = +/- 4096 bits	but invalid argument found) RBS* (message ok, but not permitted in current mode)		command argument)
Unit Interface Type	ITF=	1 byte, value of 1,2,3 or 4	Command or Query. Terrestrial interface type, where: 1 = EIA-422/EIA530 DCE, 2 = V.35 DCE 3 = EIA-232 (sync). 4 = IP interface All other codes invalid. Example: ITF=2 (V.35)	ITF= (message ok) ITF? (received ok, but invalid args found) ITF* (message ok, but not permitted in current mode)	ITF?	ITF=x (same format as command argument)
IP Address and network prefix	IPA=	18 bytes, numerical	Command or Query. IP Address and network prefix in the following format: xxx.xxx.xxx.xxx.yy Where: xxx.xxx.xxx.xxx is the address and yy is the network prefix (0-31) Example: IPA=010.006.030.001/24	IPA= (message ok) IPA? (received ok, but invalid arguments found) IPA* (message ok, but not permitted in current mode)	IPA?	IPA=xxx.xxx.xxx.xxx.yy (same format as command arguments)
Unit Framing Mode	FRM=	1 byte, value of 0 or 1	Command or Query. Unit operating mode, where 0 = Unframed - transparent (distant-end M&C not possible) 1 = Framed (EDMAC distant-end M&C possible) Example: FRM=1 (which is framed)	FRM= (message ok) FRM? (received ok, but invalid argument found) FRM* (message ok, but not permitted in current mode)	FRM?	FRM=x (same format as command argument)
Unit Test	TST=	1 byte, value of	0 = Normal	TST= (message ok)	TST?	TST=x

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
Mode		0,1,2,3,4 or 5	1 = IF loopback 2 = Digital loopback 3 = I/O loopback 4 = Tx CW 5 = Tx Alternating 1,0 pattern All other codes invalid. Example TST=4 (which is transmit CW)	TST? (received ok, but invalid argument found) TST* (message ok, but not permitted in current mode)		(same format as command argument)
Unit IF Impedance	IMP=	1 byte, value of 5 or 7	Command or Query. IF interface impedance, where: 5 = 50 ohms 7 = 75 ohms All other codes invalid. Example IMP=7 (75 ohms)	IMP= (message ok) IMP? (received ok, but invalid argument found)	IMP?	IMP=x (same format as command argument)
Unit Alarm Mask	MSK=	5 bytes, each with a value of 0 or 1	Command or Query. Alarm mask conditions, in the form abcde, where: a = mask Tx AIS alarm, b = mask Rx AGC alarm c = mask buffer alarms, d = mask Rx AIS alarm e = mask Eb/No alarm Setting any of these bytes to 0 unmasks alarm, setting to 1 masks them. Example: MSK=01011	MSK= (message ok) MSK? (received ok, but invalid arguments found) MSK* (message ok, but not permitted in current mode)	MSK?	MSK=abcde (same format as command arguments)
EDMAC Slave Address	ESA=	4 bytes, numerical	Command or Query. EDMAC Slave Address - sets the range of addresses of distant-end units (modems or transceivers) which this unit will forward messages for. Only values which are integer multiples of ten are permitted. (0010, 0020, 0030, 0040 etc.) Example: ESA=0890 Important Note: Setting the value of the EDMAC Slave Address to 0000 disables this function. Setting a valid address here will automatically	ESA= (message ok) ESA? (received ok, but invalid arguments found) ESA* (message ok, but not permitted in current mode - for example if ESA= is sent to a distant-end slave unit)	ESA?	ESA=xxxx (same format as command arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			define the unit as being an EDMAC Master. This command is only valid for an EDMAC master. When used as a Query, it may be sent to an EDMAC slave, which will respond with the appropriate address.			
Circuit ID string	CID=	24 bytes, ASCII	Command or Query. Sets or queries the user-defined Circuit ID string, which is a fixed length of 24 characters. Valid characters include: Space ( ) * + - , . / 0-9 and A-Z.	CID= (message ok) CID? (received ok, but invalid arguments found)	CID?	CID=xxxxxxxx xxxxxxxxxxxxxx x (same format as command arguments)
Outdoor Unit Comms	ODU=	1 byte, value of 0 or 1	Command or Query. Enables or disables communication, via an FSK serial link, with a Comtech Transceiver (Outdoor unit). 0 = disabled 1 = enabled Example: ODU=0	ODU= (message ok) ODU? (received ok, but invalid arguments found) ODU* (message ok, but not permitted in current mode)	ODU?	ODU=x (same format as command arguments)
AUPC Enable	AUP=	1 byte, value of 0 or 1	Command or Query. Enables or disables AUPC (Automatic Uplink Power Control). 0 = disabled 1 = enabled Example: APC=0 Note: Framing must be selected for the AUPC feature to work. If AUPC is selected when Framing is disabled, APC* will be returned	AUP= (message ok) AUP? (received ok, but invalid arguments found) AUP* (message ok, but not permitted in current mode)	AUP?	AUP=x (same format as command arguments)
AUPC Parameters	APP=	6 bytes,	Command or Query. Defines AUPC (Automatic Uplink Power Control) operating parameters. Has the form abc.cd Where: a = Define action on max power condition:	APP= (message ok) APP? (received ok, but invalid arguments found) APP* (message ok, but not permitted in current mode)	APP?	APP=abc.cd (same format as command arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			0 = do nothing 1 = generate TX alarm b = Define action on remote demod unlock: 0 = go to nominal power 1 = go to max power c.c = Target Eb/No value, in dB, for remote demod d = Maximum increase in Tx Power permitted, in dB Example: APP= 015.67 Note: If APP is selected when Framing and/or AUPC is disabled, APP* will be returned			
Remote Eb/No	N/A	4 bytes, numerical	Query only. (AUPC feature) Returns the value of Ebi/No of the remote demod, if Framing is enabled. Returns 99.9 if demod is unlocked. Returns xx.x if Framing is not enabled. Range: between 2 and 16dB. Resolution 0.2 dB. Example: REB=12.4 (which is Eb/No = 12.4 dB) For values > 16.0 dB, the reply will be REB=16.0	N/A	REB?	REB=xx.x (see description for details of arguments)
Tx Power level Increase	N/A	3 bytes, numerical	Query only. (AUPC feature) Returns the increase in Tx power level, in dB (from the nominal setting) due to the action of AUPC. Returns x.x if AUPC is not enabled. Example: PLI=2.3	N/A	PLI?	PLI=x.x (see description for details of arguments)
Global Configuration	MGC=	78 bytes, with numerical entries, fixed value entries, and delimiters	Command or Query. Global configuration of unit, in the form: FFF.FFFFDDDD.DDDGRMVSPP.PCX fff.ffffdddd.dddgrmvswwctt.tbIOTZAAAAAUEEEEB YYY.YYW, where: F = Tx Frequency - same as TFQ= (8 bytes) D = Tx Data Rate - same as TDR= (8 bytes)	MGC= (message ok) MGC? (received ok, but invalid arguments found)	MGC?	MGC=FFF.FFFFDDD.DDDRMVSPP.PCXfff.ffffddd.dddrmvswwctt.tbIOTZAAAAAUEEEEBYYY.YYW

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			G = Tx FEC Coding type - same as TFT= (1 byte) R = Tx FEC Code Rate - same as TCR= (1 byte) M = Tx Modulation - same as TMD= (1 byte) V = Tx Spectrum Invert - same as TSI= (1 byte) S = Tx Scrambler State - same as TSC= (1 byte) P = Tx Power Level - same as TPL= (4 bytes) C = Tx Clock Source - same as TCK= (1 byte) X = Tx Carrier Status - same as TXO= (1 byte) f = Rx Frequency - same as RFQ= (8 bytes) d = Rx Data Rate - same as RDR= (8 bytes) g = Rx FEC Decoding type - same as RFT= (1 byte) r = Rx FEC Code Rate - same as RCR= (1 byte) m = Rx Modulation - same as RMD= (1 byte) v = Rx Spectrum Invert - same as RSI= (1 byte) s = Rx De-scrambler - same as RDS= (1 byte) w= Rx Sweep Width - same as RSW= (2 bytes) c = Rx Clock Mode - same as RCM= (1 byte) t = Eb/No Alarm Point - same as EBA= (4 bytes) b = Rx Buffer Size - same as RBS= (1 byte) I = Unit Interface Type - same as ITF= (1 byte) O =Unit Framing Mode - same as FRM= (1 byte) T = Unit Test Mode - same as TST= (1 byte) Z = Unit IF Impedance - same as IMP= (1 byte) A = Alarm Mask - same as MSK= (5 bytes) U= ODU Comms - same as ODU= (1 byte) E= EDMAC Slave address - same as ESA= (4 bytes)			(same format as command arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			B= AUPC enable - same as AUP= (1 byte) Y = AUPC setup - same as APP= (6 bytes) W =Stats log interval- same as SSI (1 byte), Example: MGC=074.56780064.0001720112.720082.65430 128.0002320116109.81211100000102361115.659			
Config Store	CST=	1 byte, numerical, 0 to 9	Forces the unit to store the current modem configuration in Configuration Memory location defined by the one byte argument (0 to 9). Example CST=4 (Store current config in location 4) WARNING: Use with caution! If the location already contains data it will be automatically overwritten. If in doubt, query the location first.	CST= (message ok) CST? (received ok, but invalid arguments found)	CST?n, where n is 0 to 9 CST?0, or CST?1, or CST?2, or CST?3, or CST?4, or CST?5, or CST?6, or CST?7, or CST?8, or CST?9	Return the same format as the MGC with the form: CST= for a valid config, and CST* where no valid config is found in that n
Config Load	CLD=	1 byte, numerical, 0 to 9	Command only. Forces the unit to retrieve the Configuration Memory location defined by the one byte argument (0 to 9). and to re-program the unit with that stored configuration.	CLD= (message ok) CLD? (message received ok, but an invalid argument was found, CST* (message ok, but the requested location does not contain a valid configuration)	N/A	N/A
Re-center Buffer	RCB=	None	Command only. Forces the unit to re-center the receive plesiochronous/doppler buffer.	RCB= (message ok)	N/A	N/A

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			This command takes no arguments.			
Force 1:1 Switch	FSW=	None	Command only. Forces the unit to toggle the Unit Fail relay to the 'fail' state for approx 500ms. If the unit is a 1:1 pair, and it is currently the 'On Line' unit, this will force a switchover, so the unit will then be in 'Standby' mode. The command is always executed by the unit, regardless of whether it is stand-alone, in a 1:1 pair, or part of a 1:N system. This command takes no arguments.	FSW= (message ok)	N/A	N/A
10dB attenuator set	ATS=	1 byte, value of 0 or 1	FACTORY USE ONLY Modulator output 10dB attenuator setting, where 0 = no attenuation 1 = 10 dB attenuation Example: ATS=0 (Used for power-level calibration)	ATS= (message ok) ATS? (received ok, but invalid arguments found) ATS* (message ok, but not permitted in current mode)	ATS?	ATS=n where n is 0 or 1
Power level DAC set	DAC=	4 bytes, numerical	FACTORY USE ONLY Modulator power output DAC setting. An argument between 0000 and 4095 is required Example: DAC=1287 (Used for power-level calibration)	DAC= (message ok) DAC? (received ok, but invalid arguments found) DAC* (message ok, but not permitted in current mode)	DAC?	DAC=xxxx where xxxx is a value between 0000 and 4095
Write EEPROM Value	EWR=	7 bytes	Command only. FACTORY USE ONLY A command in the form ddd,aaa, where ddd is a single byte data value between 0 and 255, and aaa is a starting address (in the range 0 - 127) within the serial EEPROM, where the data is to be written. Example: EWR=127,104 means write the value	EWR= (message ok) EWR? (received ok, but invalid arguments found) EWR* (message ok, but not permitted in current mode)	N/A	N/A

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			127 starting at address location 104. (Used for power-level cal, amongst other things)			
Read EEPROM Value	N/A	3 bytes	Query only. FACTORY USE ONLY A query in the form aaa where aaa is a starting bit address (in the range 0 - 127) within the modem's serial EEPROM, requesting that the byte stored at that location be returned. Example: ERD?063 returns the value of the byte stored at location 063. (Used for power-level cal, amongst other things)	N/A	ERD?	ERD=xxx where xxx is a value between 0 and 255
Set RTC Date	DAY=	6 bytes, numerical	Command or query A command in the form ddmmyy, where; dd = day of the month, between 01 and 31, mm = month of the year, between 01 and 12 and yy = year, between 97 and 96 (1997 to 2000, then 2000 to 2096) Example: DAY=240457 would be April 24, 2057	DAY= (message ok) DAY? (received ok, but invalid arguments found) DAY* (message ok, but not permitted in current mode)	DAY?	DAY=xxxxxx (same format as command arguments)
Set RTC Time	TIM=	6 bytes, numerical	Command or query A command in the form hhmmss, indicating the time from midnight, where hh = hours, between 00 and 23; mm = minutes, between 00 and 59, and ss = seconds, between 00 and 59 Example: TIM=231259 would be 23 hours, 12 minutes and 59 seconds from midnight.	TIM= (message ok) TIM? (received ok, but invalid arguments found) TIM* (message ok, but not permitted in current mode)	TIM?	TIM=xxxxxx (same format as command arguments)
Clear All Stored Events	CAE=	None	Command only Instructs the unit to clear all Stored Events This command takes no arguments.	CAE= (message ok)	N/A	N/A
Set Statistics Sample Interval	SSI=	1 byte, numerical	Command or Query. Used to set the sample interval for the Statistics Logging Function.	SSI= (message ok) SSI? (received ok, but invalid arguments found)	SSI?	SSI=x (see description for details of argument)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
Interval			SSI=x, where x = 0 to 9 in 10 minute steps. Note: setting this parameter to 0 disables the statistics logging function. Example: SSI=3 means 30 minutes	SSI* (message ok, but not permitted in current mode)		argument)
Clear All Stored Statistics	CAS=	None	Command only Instructs the unit to clear all Stored Statistics This command takes no arguments.	CAS= (message ok)	N/A	N/A
Retrieve next 5 unread Stored Events	N/A	75 bytes	Query only Unit returns the oldest 5 Stored Events which have not yet been read over the remote control. Reply format: {CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Sub-body, where Sub-body= ABCddmmyyhhmmss, A being the fault/clear indicator. F=Fault C=Clear I=Info B being the fault type where: 1=Unit 2=Rx Traffic 3=Tx Traffic 4=Power on/off, or log cleared and C being the fault code, as defined under the 'FLT' message table entry, except Info codes, which are: 0=power off, 1=power on, 2=log cleared, 3=global config change, and 4= redundancy config change. If there are no new events, the unit replies with RNE? If there are less	N/A	RNE?	RNE={CR}ABCddmmyyhhmmss{CR}ABCddmmyyhhmmss{CR}ABCddmmyyhhmmss{CR}ABCddmmyyhhmmss{CR}ABCddmmyyhhmmss (see description for details of arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			than 5 events to be retrieved, the remaining positions are padded with zeros.			
Retrieve Number of unread Stored Events	N/A	2 bytes, numerical	Query only. Unit returns the number of Stored Events which remain unread, in the form xx. Note: This means unread over the remote control - viewing the stored events from the front panel of the modem does not affect this value. Example reply: NUE=98	N/A	NUE?	NUE=xx (see description for details of arguments)
Retrieve next 5 unread Stored Statistics	N/A	130 bytes	Query only Unit returns the oldest 5 Stored Statistics which have not yet been read over the remote control. Reply format: {CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Sub-body, where Sub-body= AA.ABB.BC.CD.Dddmmyyhhmmss, AA.A = Minimum Eb/No during sample period. BB.B = Average Eb/No during sample period. C.C = Max. Tx Power Level Increase during sample period. D.D = Average Tx Power Level Increase during sample period. ddmmyyhhmmss = date/time stamp. If there are no new events, the unit replies with RNS? If there are less than 5 statistics to be retrieved, the remaining positions are padded with zeros.	N/A	RNS?	RNS={CR}AA.ABB.BC.CD.Dddmmyyhhmmss{CR}AA.ABB.BC.CD.Dddmmyyhhmmss{CR}AA.ABB.BC.CD.Dddmmyyhhmmss{CR}AA.ABB.BC.CD.Dddmmyyhhmmss{CR}AA.ABB.BC.CD.Dddmmyyhhmmss (see description for details of arguments)
Retrieve Number of unread Stored Statistics	N/A	3 bytes, numerical	Query only. Unit returns the number of Stored Statistics which remain unread, in the form xxx. Note: This means unread over the remote control - viewing the stored events from the front panel of the modem does not	N/A	NUS?	NUS=xxx (see description for details of arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			affect this value. Example reply: NUS=198			
Rx Eb/No	N/A	4 bytes, numerical	Query only. Unit returns the value of Ebi/No, between 0 and 16dB. Resolution 0.1 dB. Returns 99.9 if demod is unlocked. Example: EBN=12.3 (which is Eb/No = 12.3 dB) For values greater than 16.0 dB, the reply will be EBN=+016.	N/A	EBN?	EBN=xx.x (see description for details of arguments)
RX Coarse AGC	N/A	2 bytes, numerical	Query only. Unit returns the vaue of Coarse AGC setting, between 0 and 99 Example: AGC=76	N/A	AGC?	AGC=xx (see description for details of arguments
Rx Freq Offset	N/A	5 bytes, 1st , + or -, next 4 bytes numerical	Query only. Unit returns the value of freq. offset of the carrier being demodulated. Values range from ±0 to ± 30 kHz, 100 Hz resolution.Example: RFO=+02.3 (offset is +2.3 kHz) Returns 99999 if the demod is unlocked.	N/A	RFO?	RFO=nxx.x (see description for details of arguments)
Buffer Fill State	N/A	2 bytes, numerical	Query only. Unit returns the value of the buffer fill state. Values range from 1 to 99% .Example: BFS=33 (buffer fill state is 33%) Returns 00 if demod unlocked.	N/A	BFS?	BFS=xx (see description for details of arguments)
Rx BER	N/A	5 bytes	Query only. Unit returns the value of the estimated corrected BER in the form a.b x 10exp-c. Fist and second bytes are value, 3rd and 4th bytes are the exponent. Returns 99999 if demod is unlocked. Example: BER=4.8E3 (BER is 4.8 x 10-3)	N/A	BER?	BER=a.bEc (see description for details of arguments)
Redundancy State	N/A	1 byte, value of 0 or 1	Query only. Returns the redundancy state of the unit, where:	N/A	RED?	RED=x (see description for details of

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			0 = Off Line (forced into standby by 1:N or 1:1 Switch) 1= On Line (normal). All other codes invalid. Example: RED=1 (On Line)			arguments)
Local/Remote Status	LRS=	1 byte, value of 0 or 1	Command or query (Command only if S/W > 1.13) As a query, returns the local/remote status of the unit, where: 0 = local 1= remote When used as a comand, uses the same codes for an argument. Example: LRS=1 (unit is in remote mode)	LRS= (message ok)	LRS?	LRS=x (see description for details of arguments)
Serial Number	SNO=	4 bytes numerical 0000 to 9999	Command portion is FACTORY USE ONLY. Used to set or Query the units 4 digit serial number. Unit returns its S/N, in the form xxxx. Example: SNO=1765	SNO= (message ok)	SNO?	SNO=xxxx (see description for details of arguments)
Software Revision	N/A	4 bytes, numerical	Query only. Unit returns the value of internal software revision installed in the unit, in the form x.xx Example: SWR=1.03 (Ver 1.03)	N/A	SWR?	SWR=x.xx (see description for details of arguments)
Equipment ID	N/A	6 bytes, numerical	Query only. Unit returns the equipment identification, and the options fitted, in the form aaaabc, where: aaaa defines the Modem model number. Example: 2550 is CiM-550, no Reed-Solomon or Turbo 3550 is CiM-550 with Reed-Solomon Codec 4550 is CiM-550 with Turbo Codec fitted (Rate 3/4 QPSK only - S/W Version less than 1.15) 5550 is CiM-550 with Turbo Codec fitted (Rate 3/4 QPSK, plus Rate 21/44 and Rate 5/16 BPSK)	N/A	EID?	EID=aaaabc (see description for details of arguments)

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			b defines the IF band, with 1 = 70MHz, 2 = 140MHz c defines RX only, with 1 = RX/TX, 2 = RX only. Example: EID=455011 (CiM-550, Rate 3/4 Turbo Codec, 70 MHz band, RX/TX)			
Faults and Status	N/A	5 bytes, first 3 bytes alpha-numerical 4th and 5th bytes, value of 0 or 1	Query only. Unit returns the current fault and status codes for the Unit (hardware), Tx Traffic and Rx Traffic, in the form abcde, where: a = Unit fault status, b = Tx Traffic status, c = Rx Traffic Status, d = Change in Fault Status since last poll (0 = none, 1 = change), e = Change in Unit Configuration since last poll (0 = none, 1 = change) Unit faults: 0 = No faults 1 = Power supply fault, 5 volts 2 = Power supply fault , 12 volts 3 = Power supply fault, -5 volts 4 = Power supply fault, 18 volts 5 = Power supply fault, -12 volts 6 = RAM load fail 7 = Tx synthesiser lock 8 = Rx synthesiser 9 = Power cal Checksum error A = FPGA main chain load fail B = Turbo FPGA load fail C = CiM IP Module Fail Tx Traffic status: 0 = Tx traffic OK	N/A	FLT?	FLT=abcde (see description for details of arguments

Parameter Type	Command (Instruction Code and qualifier)	Arguments for Command or Response to Query	Description of arguments (note that all arguments are ASCII numeric codes, that is, ASCII codes between 48 and 57)	Response to Command (target to controller)	Query (Instruction Code and qualifier)	Response to query (target to controller)
			1 = No clock from terrestrial interface 2 = Tx FIFO slip 3 = AIS detected on incoming data 4 = AUPC upper limit reached Rx Traffic status: 0 = Rx Traffic OK 1 = Demodulator unlocked 2 = AGC Alarm - signal level too high 3 = Frame sync lost (Reed-Solomon or EDMAC) 4 = Buffer Underflow 5 = Buffer Overflow 6 = AIS detected on incoming data 7 = Eb/No threshold exceeded			

Chapter 6.
Theory of Operation

6.1 FUNCTIONAL DESCRIPTION

The CiM-550 has two fundamentally different types of interface - IF and data. The data interface is a bi-directional path which connects with the customer's equipment (assumed to be the DTE) and the modem (assumed to be the DCE). The IF interface provides a bi-directional link with the satellite via the uplink and downlink equipment.

Transmit data is received by the terrestrial interface where line receivers convert the clock and data signals to CMOS levels for further processing. A small FIFO follows the terrestrial interface to facilitate the various clocking and framing options. If framing is enabled, the transmit clock and data output from the FIFO pass through the framer, where the EDMAC data is added to the main data. Otherwise, the clock and data are passed directly to the Forward Error Correction encoder. In the FEC encoder, the data is differentially encoded, scrambled, and then convolutionally encoded.

Following the encoder, the data is fed to the transmit digital filters, which perform spectral shaping on the data signals. The resultant I and Q signals are then fed to the QPSK/BPSK modulator. The carrier is generated by a frequency synthesizer, and the I and Q signals directly modulate this carrier to produce an IF output signal.

The received IF signal is first translated to a fixed IF frequency, using a frequency synthesizer. An AGC circuit maintains the composite level within the IF bandwidth constant over a limited range. Following this, the signal is sampled by a high-speed (flash) A/D converter. All processing beyond this conversion is purely digital. The signal is translated down to near zero frequency by a complex mix, and then is processed by a digital Costas Loop, which performs the functions of Nyquist filtering, carrier recovery, and bit-timing recovery. The resultant demodulated signal is fed, in soft decision form, to the FEC decoder (Viterbi, Sequential or Turbo, and Reed-Solomon, if installed).

After decoding, the recovered clock and data pass to the de-framer (if EDMAC is enabled) where the overhead information is removed. Following this, the data passes to the Plesiochronous/Doppler buffer, which has a programmable size, or may be bypassed. From here, the receive clock and data signals are routed to the terrestrial interface, and are passed to the externally connected DTE equipment.

6.2 OFFSET QPSK OPERATION

Offset QPSK modulation is a variation of normal QPSK, which is offered in the CiM-550. Normal, bandlimited, QPSK produces an RF signal envelope which necessarily goes through a point of zero amplitude when the modulator transitions through non-adjacent phase states. This is not considered to be a problem in most communication systems, as long as the entire signal processing chain is linear.

However, when bandlimited QPSK is passed through a non-linearity (for instance, a saturated power amplifier), there is a tendency for the carefully-filtered spectrum to degrade. This phenomenon is termed ‘spectral re-growth’, and at the extreme (hard limiting) the original, unfiltered sinx/x spectrum would result. In most systems, this would cause an unacceptable level of interference to adjacent carriers, and would cause degradation of the BER performance of the corresponding demodulator.

To overcome the problem of the envelope collapsing to a point of zero amplitude, Offset QPSK places a delay between I and Q channels of exactly 1/2 symbol. Now the modulator cannot transition through zero when faced with non-adjacent phase states. The result is that there is far less variation in the envelope of the signal, and non-linearities do not cause the same level of degradation.

The demodulator must re-align the I and Q symbol streams before the process of carrier recovery can take place. For various reasons this makes the process of acquisition more difficult. The two consequences of this are:

Acquisition may be longer, especially at low data rates.

The acquisition threshold is higher than for normal QPSK, although the demodulator will maintain lock down to its normal levels. The acquisition thresholds are as follows:

- 7.0 dB Eb/No for Rate 1/2
- 5.2 dB Eb/No for Rate 3/4
- 4.8 dB Eb/No for Rate 7/8
- 4.0 dB Eb/No for Uncoded operation (No FEC)

6.3 EIA-232 OPERATION

The CiM-550 supports asynchronous EIA-232 in addition to synchronous EIA-232 formats. This is useful, for example, in connecting two computers together, via their serial ports, at opposite ends of a satellite link. There are, however, some restrictions and limitations when using this mode, and the user may have to experiment a little in order to get reliable communication.

6.3.1 ASYNC EIA-232 SPECIFICATIONS

Maximum operating baud rate:	57.6 kbaud (QPSK and OQPSK) 28.8 kbaud (BPSK)
Additional data overhead required:	Zero. A 9.6 kbaud connection uses a 9.6 kbps carrier.
Maximum allowable baud rate tolerance:	+/- 600 ppm
Character formats supported:	Any, except those using 1.5 stop bits (see note below)
Flow control:	None
Handshaking line supported:	Data Carrier Detect (DCD)
Connectivity required:	Rx data, Tx Data and Ground (DCD optional)

6.3.2 SETUP

The setup required for this mode is remarkably simple. Select EIA-232 as the interface type, and then select the required baud rate for both transmit and receive data rates. Detection of the asynchronous mode is fully automatic. If no clock is detected, asynchronous mode is assumed, and the internal circuitry is switched accordingly. The settings for both Tx and Rx clocking are irrelevant - the selected clocking options are ignored, and the internal clock circuitry is reconfigured for this ‘special’ mode.

6.3.2.1 BAUD RATE ACCURACY

When connecting devices where the baud rate is not within the tolerance of +/- 600ppm, the Tx FIFO and Rx Buffer will occasionally underflow or overflow, causing characters to be lost. To avoid this, while the external device is connected, and transmitting data, connect a frequency counter to pin 15 of the rear panel Data Connector (the 25 pin ‘D’ type female). Measure the frequency, then set the transmit frequency to be equal to this value on the local modem, and set the receive frequency to this value at the other end of the link. If a frequency counter is not available, 10 minutes of trial and error will be an adequate substitute. Set the modem to an IF loop, and then try changing the baud rate by approximately 500 ppm at a time. At 9600 baud, this equates to either 9605 or 9595 baud, with further increments of 5 bps. If changing the baud rate in a positive direction results in more frequent buffer and/or FIFO slips, then move it in the opposite direction. Do this until the slips are eliminated.

6.3.2.2 ASYNC CHARACTER FORMATS USING 1.5 STOP BITS

For situations where an async character format using 1.5 stop bits cannot be avoided, set the modem data rate to exactly twice the incoming baud rate. This uses twice as much bandwidth, but will permit this mode of operation.

6.3.3 CLOCKING

When dealing with satellite modems, the subject of clocking can be a complex issue. This section describes the various clocking options which are available with the CiM-550.

6.3.3.1 TRANSMIT CLOCKING

There are four transmit clocking modes in the CiM-550. EIA-422/449 signal mnemonics will be used for illustration, but the description applies equally to V.35, and synchronous EIA-232.

6.3.3.1.1 Internal Clock

In this mode, the modem, assumed always to be the DCE, supplies the clock to the DTE. (The EIA-422/449 name for this signal is Send Timing, or ST.) The DTE then clocks from this source, and gives the modem transmit data (Send Data, or SD), synchronous with this clock. It is optional whether the DTE also returns the clock (Terminal Timing, or TT) - the modem can accept if it is present, but uses ST if is not.

6.3.3.1.2 External Clock

In this mode, the modem expects to see the DTE provide the clock, so that it can phase-lock its internal circuits. In this case, the modem does not provide any signal on ST, but instead requires a clock signal on Terminal Timing (TT), synchronous with the data. If no clock is present, an alarm will be generated.

6.3.3.1.3 Loop-Timed, RX=TX

In certain circumstances, a terminal at the distant-end of a satellite link may be required to provide a clock to the DTE equipment which is locked to the receive satellite signal. This is similar to Internal Clock mode, in that the modem will source Send Timing (ST) to the DTE, but now the timing is derived from the demodulator. The DTE then clocks from this source, and gives the modem transmit data (Send Data, or SD), synchronous with this clock. It is optional whether the DTE also returns the clock (Terminal Timing, or TT) - the modem can accept if it is present, but uses ST if it is not. If the demodulator loses lock, the modem's internal clock will be substituted, so an accurate and stable clock is present on ST, rather than a clock which may jitter and wander in a random fashion.

6.3.3.1.4 Loop-Timed, RX<>TX (Asymmetric Loop Timing)

The CiM-550 incorporates circuitry which permits loop timing when the TX and RX data rates are not the same. In this case the clock frequency appearing at ST will be whatever the TX data rate is programmed to, but phase-locked to the demodulator's receive symbol clock. In all other respects the operation is the same as for 'standard' loop timing.

6.3.3.2 RECEIVE CLOCKING

There are three receive clocking modes in the CiM-550.

6.3.3.2.1 Buffer Disabled

When the buffer is disabled, the receive clock (Receive Timing, or RT) is derived directly from the demodulator, and hence will be subject to plesiochronous and Doppler offsets. In certain instances, this may be acceptable, and in the case of Loop Timing, it is essential that the buffer is disabled (which is done automatically).

6.3.3.2.2 Buffer Enabled, RX=TX

In this instance, it is required that buffer be enabled, so that the clock and data appearing on Receive Timing and Receive Data (RT and RD respectively) are synchronous with the transmit clock. This is a relatively simple case, as the output clock for the buffer is derived directly from either ST or TT.

6.3.3.2.3 Buffer Enabled, RX<>TX

This is an uncommon case, where the receive and transmit data rates are not equal. The modem will generate a phase-locked buffer output clock which uses the transmit clock, regardless of its frequency in relation to the receive data rate.

6.3.3.3 X.21 NOTES

For X.21 operation, use the EIA-422/530 pins, but ignore Receive Clock if the Modem is DTE, and ignore Transmit clocks if the Modem is DCE.

6.3.3.4 LOOP TIMING WITH SYNC EIA-232

The CiM-550 distinguishes between synchronous and asynchronous EIA-232 by detecting clock activity on the TX Clock pin of the interface. If no clock is detected, it is assumed that the mode is asynchronous. Therefore, if loop timing is employed in a synchronous EIA-232 application, it is essential to provide an external loop between the ST and TX clock pins. If this is not done, the modem will assume an async mode, which is not compatible. The loop should be placed between pin 15 and pin 24 on the 25 pin ‘D’ type interface.

6.3.4 TRANSMIT AND RECEIVE CLOCKING

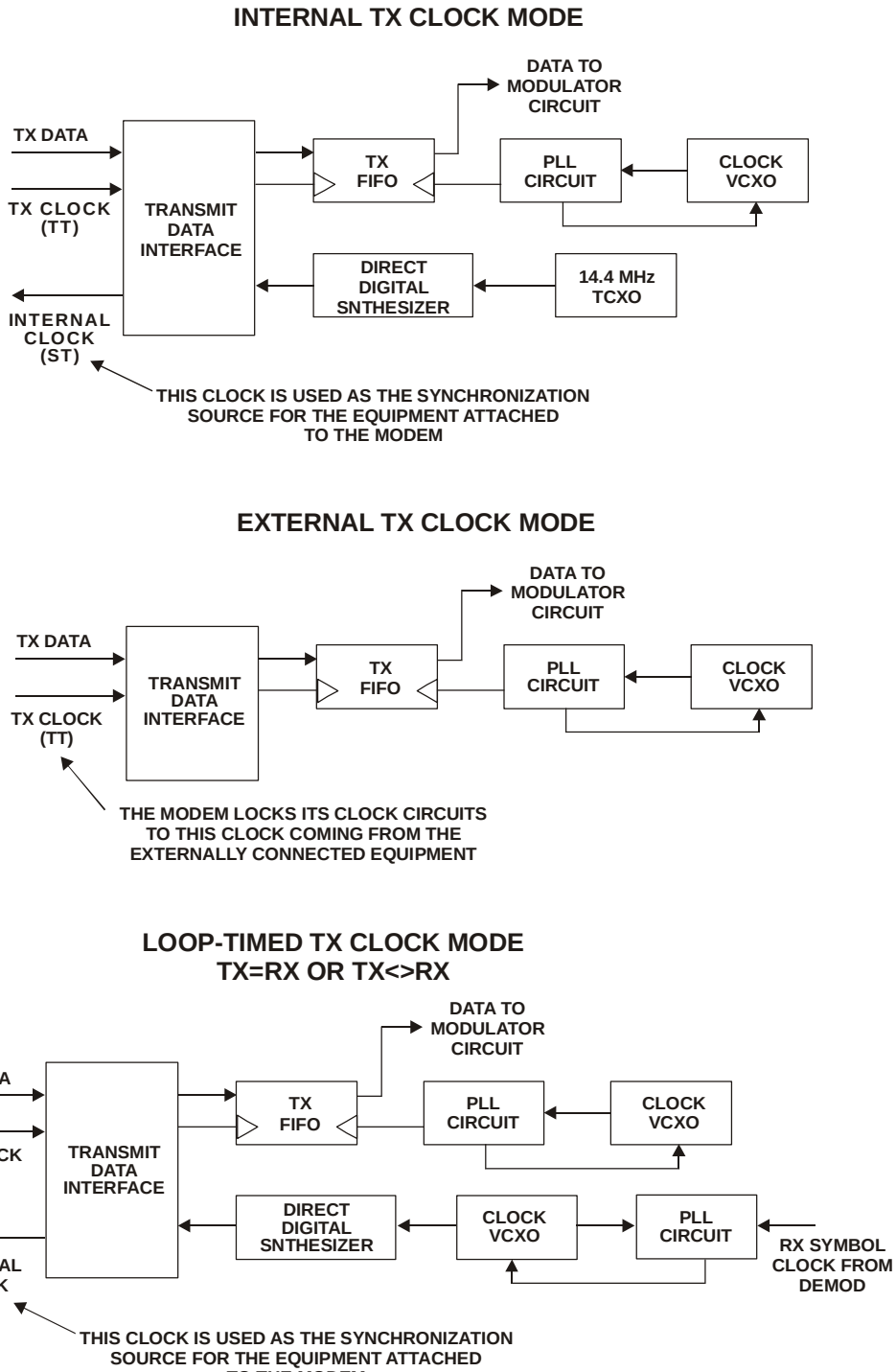


Figure 6-1. Tx Clock Modes

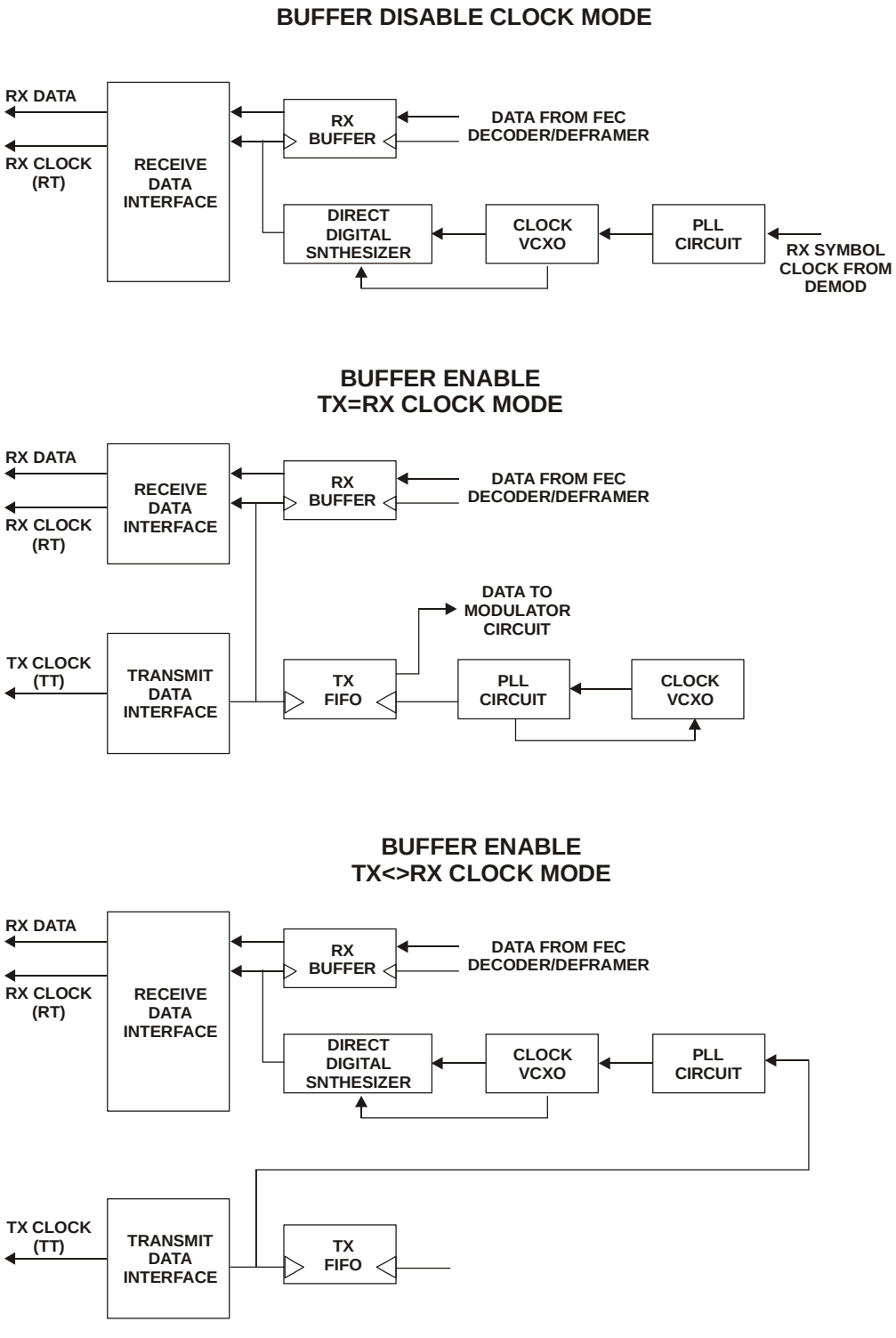


Figure 6-2. RX Clock Modes

6.4 AUPC (AUTOMATIC UPLINK POWER CONTROL)

Automatic Uplink Power Control (AUPC) is a feature whereby a local modem is permitted to adjust its own output power level in order to attempt to maintain the Eb/No at the remote modem.

The user MUST obtain permission from the Satellite Operator to use this feature. Improper use of this feature could result in a transmitting terminal seriously exceeding its allocated flux density on the Operator's satellite. This could produce interference to other carriers, and could cause transponder saturation problems.

To accomplish this, the framed (EDMAC) mode of operation must be used. The remote modem constantly sends back information about the demodulator Eb/No using reserved bytes in the overhead structure. The local modem then compares this value of Eb/No with a pre-defined target value. If the Remote Eb/No is below the target, the local modem will increase its output power, and hence, a closed-loop feedback system is created over the satellite link. A particularly attractive benefit of this feature is that whenever framed operation is selected, the remote demodulator's Eb/No can be viewed from the front panel display of the local modem. Note also that AUPC can be used simultaneously with EDMAC.

There are several important parameters associated with this mode of operation, and the user needs to understand how the AUPC feature works, and the implications of setting these parameters.

6.4.1 SETTING AUPC PARAMETERS

1. The user, under the menu (CONFIG, FRAME) first ensures that Framed mode is selected. EDMAC may be disabled, or the unit may be defined as an EDMAC Master or Slave. The important consideration is that Framing should be enabled.
2. The user should verify that the remote modem also has Framing enabled.
3. The user, under the menu (CONFIG, TX, PWR) sets the nominal output power of the modem. This is done by selecting the MANUAL mode, then editing the TX output power level displayed.
4. The user will then select AUPC as the operating mode. At this point the user will be prompted to define four key parameters:

6.4.1.1 TARGET EB/NO

This is value of Eb/No that the user desires to keep constant at the remote modem.

If the Eb/No exceeds this value, the AUPC control will reduce the TX output power, but will never drop below the nominal value set.

If the Eb/No falls below this value, the AUPC control will increase the TX output power, but will never exceed the value determined by the parameter MAX RANGE.

- The minimum value the user can enter is 0.0 dB
- The maximum value the user can enter is 9.9 dB
- The default value is 3.0 dB
- The resolution is 0.1 dB

6.4.1.2 MAX RANGE

This defines how much the modem is permitted to increase the output level, under AUPC control.

- The minimum value the user can enter is 0 dB
- The maximum value the user can enter is 9 dB
- The default value is 1 dB
- The resolution is 1 dB

6.4.1.3 ALARM

This parameter defines how the user wants the modem to act if, under AUPC control, the maximum power limit is reached.

The two choices are:

- NONE (no action)
- TX ALARM (generate a TX alarm)

The default setting is NONE.

6.4.1.4 DEMOD UNLOCK

This defines the action the modem will take if the remote demodulator loses lock.

The two choices are:

- NOMINAL (reduce the TX Output Power to the nominal value)
- MAXIMUM (increase the TX Output Power to the maximum value permitted by the parameter MAX RANGE)

The default setting is NOMINAL.

Note: If the local demod loses lock, the modem will automatically move its output power to the nominal value.)

6.4.2 COMPENSATION RATE

As with any closed-loop control system, the loop parameters must be chosen to ensure stability at all times. Several features have been incorporated to ensure that the AUPC system does overshoot, or oscillate.

First, the rate at which corrections to the output power can be made is fixed at once every 4 seconds. This takes into account the round trip delay over the satellite link, the time taken for a power change to be reflected in the remote demodulator's value of Eb/No, and other processing delays in the modems.

Second, if the comparison of actual and target Eb/No yields a result that requires a change in output power, the first correction made will be 80% of the calculated step. This avoids the possibility of overshoot. Subsequent corrections are made until the difference is less than 0.5 dB. At this point, the output power is only changed in increments of 0.1 dB, to avoid 'hunting' around the correct set point.

6.4.3 MONITORING

The remote demodulator's value of Eb/No can be monitored at all times, either from the front panel (MONIT, AUPC) or via the remote control interface. The resolution of the reading is 0.2 dB. For all values greater than or equal to 16 dB, the value 16.0 dB will be displayed. As long as framing is enabled, the value will still be available, even though AUPC may be disabled.

Also displayed is the current value of TX power increase. If Framing is enabled, but AUPC is disabled, this will indicate 0.0 dB. This value is also available via the remote control interface.

Comtech EF Data strongly cautions against the use of large values of permitted power level increase under AUPC control. Users should consider using the absolute minimum range necessary to improve rain-fade margin.

Chapter 7.
Forward Error Correction Options

7.1 INTRODUCTION

As standard, the CiM-550 Modem is equipped with two Forward Error Correction Decoders, Viterbi and Sequential. The constraint lengths and encoding polynomials are compatible with the vast majority of existing modems from other manufacturers, and Comtech EF Data has performed compatibility testing to ensure inter-operability.

As an option, the CiM-550 may be fitted with two additional Forward Error Correction (FEC) devices. The first is a concatenated Reed-Solomon Codec. This is always used in conjunction with, rather than instead of, the main FEC method (Viterbi or Sequential). The second option is Comtech EF Data's Turbo Product Codec, which is an entirely stand-alone method of FEC. These options are small daughter cards, and may be fitted at the factory at the time of order, or may be added by the user at a later date.

7.2 VITERBI

The combination of convolutional coding and Viterbi decoding has become an almost universal standard for satellite communications. The CiM-550 complies with the Intelsat IESS 308/309 standards for Viterbi decoding with a constraint length of seven. This is a de facto standard, even in a closed network environment, which means almost guaranteed inter-operability with other manufacturer's equipment. It provides very useful levels of coding gain, and its short decoding delay and error-burst characteristics make it particularly suitable for low data rate coded voice applications. It has a short constraint length, fixed at 7, for all code rates. (The constraint length is defined as the number of output symbols from the encoder which are affected by a single input bit.)

A choice of coding rates (Rate 1/2, 3/4 or 7/8) allows the user to trade off coding gain for bandwidth expansion. Rate 1/2 coding gives the best improvement in error rate, but doubles the transmitted data rate, and hence doubles the occupied bandwidth of the signal. Rate 7/8 coding, at the other extreme, provides the most modest improvement in performance, but only expands the transmitted bandwidth by 14 %.

A major advantage of the Viterbi decoding method is that the performance is independent of data rate, and does not display a pronounced threshold effect (ie, does not fail rapidly below a certain value of Eb/No). This is not true of the Sequential decoding method, as explained in the section below. Note that in BPSK mode, the CiM-550 only permits a coding rate of 1/2. Because the method of convolutional coding used with Viterbi, the encoder does not preserve the original data intact, and is called non-systematic.

Table 7-1. Viterbi Decoding Summary

For	Against
Good BER performance - very useful coding gain.	Higher coding gain possible with Sequential.
Almost universally used, with *de facto* standards for constraint length and coding polynomials	
Shortest decoding delay (~100 bits) of any FEC scheme - good for coded voice.	
Short constraint length produce small error bursts - good for coded voice.	
No pronounced threshold effect - fails gracefully.	
Coding gain independent of data rate.	

7.3 SEQUENTIAL

Although the method of convolutional coding and Sequential decoding appear to be very similar to the Viterbi method, there are some fundamental differences. The convolutional encoder is said to be systematic, it does not alter the input data, and the FEC overhead bits are simply appended to the data. The constraint length, k, is much longer (Rate 1/2, k=36. Rate 3/4, k= 63. Rate 7/8, k=87).

This means that when the decoding process fails (that is, when its capacity to correct errors is exceeded) it produces a burst of errors which is in multiples of half the constraint length. An error distribution is produced which is markedly different to that of a Viterbi decoder. This gives rise to a pronounced threshold effect. A reduction in Eb/No of just a few tenths of a dB can make the difference between acceptable BER and a complete loss of synchronization. The decoding algorithm itself (called the Fano algorithm) uses significantly more path memory (4 kbits in this case) than the equivalent Viterbi decoder, giving rise to increased latency.

A fixed computational clock is used to process input symbols, and to search backwards and forwards in time to determine the correct decoding path. At lower data rates there are sufficient number of computational cycles per input symbol to permit the decoding process to perform optimally. However, as the data rate increases, there are fewer cycles available, leading to a reduction in coding gain. This is clearly illustrated in the performance curves which follow. For data rates above ~1 Mbps, Viterbi should be considered the better alternative.

Table 7-2. Sequential Decoding Summary

FOR	AGAINST
Higher coding gain (1 -2 dB) at lower data rates, compared to Viterbi.	Pronounced threshold effect - does not fail gracefully in poor Eb/No conditions.
	Higher processing delay than Viterbi (~4 k bits) - not good for low-rate coded voice.
	Coding gain varies with data rate - favors lower data rates.

7.4 TURBO PRODUCT CODEC (OPTION)

Turbo coding is an FEC technique developed within the last few years, which delivers significant performance improvements compared to more traditional techniques. Unlike the popular method of concatenating a Reed-Solomon codec with a primary FEC codec, Turbo Coding is an entirely stand-alone method. It does not require the complex interleaving/de-interleaving of the RS approach, and consequently, decoding delays are significantly reduced - see below.

Two general classes of Turbo Codes have been developed, Turbo Convolutional Codes (TCC), and Turbo Product Codes (TPC, a block coding technique). TCC suffers from an irreducible BER of approximately 1 x 10-7, and consequently, a Reed-Solomon codec has to be added in order to achieve an acceptably low BER. For delay-sensitive applications this may be unacceptable, and the implementation complexity of the TCC approach is high. For these reasons Comtech EF Data has chosen to implement an FEC codec based on TPC.

A Turbo Product Code is a 2 or 3 dimensional array of block codes. Encoding is relatively straightforward, but decoding is a very complex process requiring multiple iterations of processing for maximum performance to be achieved.

When Comtech EF Data first introduced the Turbo Coding option in the CiM-550, only Rate 3/4 QPSK was offered. This is an excellent choice for applications where maximum bandwidth efficiency is desired, in combination with high coding gain. However, with Firmware Version 1.15 (and later) Comtech EF Data has introduced two further code rates - Rate 21/44 BPSK (very close to Rate 1/2) and Rate 5/16 BPSK (very close to Rate 1/3).

These two rates were developed to address an entirely different case, namely that of transmission from very small antennas, with limited transmitter power. For a dish antenna, the gain is directly proportional to its area, and the lower the gain, the less directional the antenna becomes. Thus, in satellite transmission, even though the dish may be perfectly pointed at the desired satellite, if the beamwidth is wide enough, adjacent satellites in the orbital arc will also be illuminated. This is a potential source of interference, and for this reason the ITU (International Telecommunications Union) place strict limits on the power spectral density (also referred to as flux density) of signals arriving at adjacent satellites.

One obvious method to reduce the level is to spread the transmitted signal over as wide a bandwidth as possible. In the past, this has sometimes been achieved using a Spread Spectrum modulation format, but this has severe penalties as far as demodulator complexity is concerned. However, by using BPSK modulation, and high FEC code rates (up to Rate 1/3, for example) the power spectral density may be reduced. Taking Rate 1/2 QPSK as a baseline, moving to Rate 5/16 BPSK Turbo Product Coding gives an immediate reduction in power spectral density of 5.0 dB.

The increased coding gain of this FEC method allows a further reduction in transmitter power. Using Rate 1/2 Viterbi with concatenated Reed-Solomon as a baseline example, Rate 5/16 provides 1.5 - 2.0 dB improvement in coding gain. Putting these two factors together yields an overall reduction in power spectral density of approximately 7.0 dB. This simultaneously permits a smaller antenna, and reduced transmitter power. The disadvantage is the increased spectral occupancy of the carrier, and it will depend on the particular satellite operator to determine if this poses a severe economic problem.

When operating at these higher code rates (21/44 and 5/16), the demodulator is forced to operate in a region where the Ebt/No (also referred to as Es/No) is negative - in other words, there is more noise than signal. For this reason it is more difficult for the demodulator to accurately measure the Eb/No, and so users may see more variation than normal when viewing the Eb/No on the RX PARAMETERS screen, and when operating near threshold. This is most pronounced in the case of Rate 5/16.

One unexpected advantage of the Turbo Product Coding method is that, unlike concatenated Reed-Solomon methods, there is no pronounced threshold effect. The demodulator and FEC codec can stay locked down to very low values of Eb/No, but at this level the output BER becomes unusable (around 1 x 10-2).

In many cases, FEC methods which provide increased coding gain do so at the expense of increased processing delay. However, with TPC, this increase in delay is very modest. The table below shows, for the CiM-550, the processing delays for the major FEC types, including the three TPC modes:

FEC Mode (64 kbps data rate)	End-to-end delay, ms
Viterbi, Rate 1/2	12
Sequential, Rate 1/2	74
Turbo Product Coding, Rate 3/4, QPSK	79
Turbo Product Coding, Rate 21/44, BPSK	64
Turbo Product Coding, Rate 5/16, BPSK	48

Note: In all cases, the delay is inversely proportional to data rate, so for 128 kbps, the delay values would be half of those shown above.

It can be clearly seen that the concatenated Reed-Solomon cases increase the delay very significantly (due mainly to interleaving/de-interleaving), while the TPC cases yield delays which are less than or equal to Sequential decoding.

FOR	AGAINST
Exceptionally good BER performance - significant improvement compared with every other FEC method in use today	Nothing!
No pronounced threshold effect - fails gracefully	
Exceptional bandwidth efficiency for Rate 3/4 QPSK - 40% less than Viterbi and concatenated Reed-Solomon	
Coding gain independent of data rate (in this implementation)	
Low decoding delay	
Easy field upgrade in CiM-550	

7.5 UNCODED OPERATION (NO FEC)

COMTECH EFDATA CANNOT BE HELD RESPONSIBLE FOR INCORRECT OPERATION IF THE USER DOES NOT ADHERE TO THESE GUIDELINES WHEN USING UNCODED OPERATION.

There are occasions where a user may wish to operate a satellite link with no forward error correction of any kind. For this reason, the CiM-550 offers this uncoded mode for all three modulation types - BPSK, QPSK and OQPSK. However, the user should be aware of some of the implications of using this approach.

PSK demodulators have two inherent undesirable features. The first of these is known as ‘phase ambiguity’, and is due to the fact the demodulator does not have any absolute phase reference, and in the process of carrier recovery, the demodulator can lock up in any of K phase states, where K = 2 for BPSK, K = 4 for QPSK/OQPSK. Without the ability to resolve these ambiguous states there would be a 1-in-2 chance that the data at the output of the demodulator would be wrong, in the case of BPSK. For QPSK, the probability would be 3 in 4.

The problem is solved in the case of BPSK by differentially encoding the data prior to transmission, and then performing the inverse decoding process. This is a very simple process, but has the disadvantage that it doubles the receive BER. For every bit error the demodulator produces, the differential decoder produces two.

The problem for QPSK is more complex, as there are 4 possible lock states, leading to 4 ambiguities. When FEC is employed, the lock state of the FEC decoder can be used to resolve two of the four ambiguities, and the remaining two can be resolved using serial differential encoding/decoding. However, when no FEC is being used, another scheme entirely must be used. Therefore, in QPSK, a parallel differential encoding/decoding technique is used, but has the disadvantage that it again doubles the receive BER.

OQPSK is a different situation again, where the ambiguities result not only from not having an absolute phase reference, but also not knowing which of the two parallel paths in the demod, I or Q, contains the half-symbol delay. Another type of differential encoding is used, but yet again the error rate is doubled, compared to ideal.

Note: Whenever uncoded operation is selected, the modem automatically uses the differential encoder/decoder appropriate for the modulation type. It cannot be disabled.

The second problem inherent in PSK demodulators is that of ‘data false locking’.

In order to accomplish the task of carrier recovery, the demodulator must use a non-linear process. A second-order non-linearity is used for BPSK, and a fourth-order non-linearity is used for QPSK. When data at a certain symbol rate is used to modulate the carrier, the demodulator can lock at incorrect frequencies, spaced at intervals of one-quarter of the symbol rate away from the carrier. Fortunately, when FEC decoding is used, the decoder synchronization state can be used to verify the correct lock point has been achieved, and to reject the false locks.

If uncoded operation is used, there is no way to recognize a data false lock. The demodulator will indicate that it is correctly locked, but the data out will not be correct.

Comtech EF Data strongly cautions users when using uncoded operation. If the acquisition sweep width exceeds one quarter of the symbol rate, there is a very high probability that the demodulator will false lock.

As an example, if 64 kbps QPSK, uncoded is used, the symbol rate will be half of this rate, or 32 ksps. One quarter of this equals 8 kHz. Therefore, the absolute maximum acquisition sweep range which should be considered is +/- 8 kHz. If there is any frequency uncertainty on the incoming carrier, this should be subtracted from the sweep width. The problem becomes progressively better with increasing symbol rate.

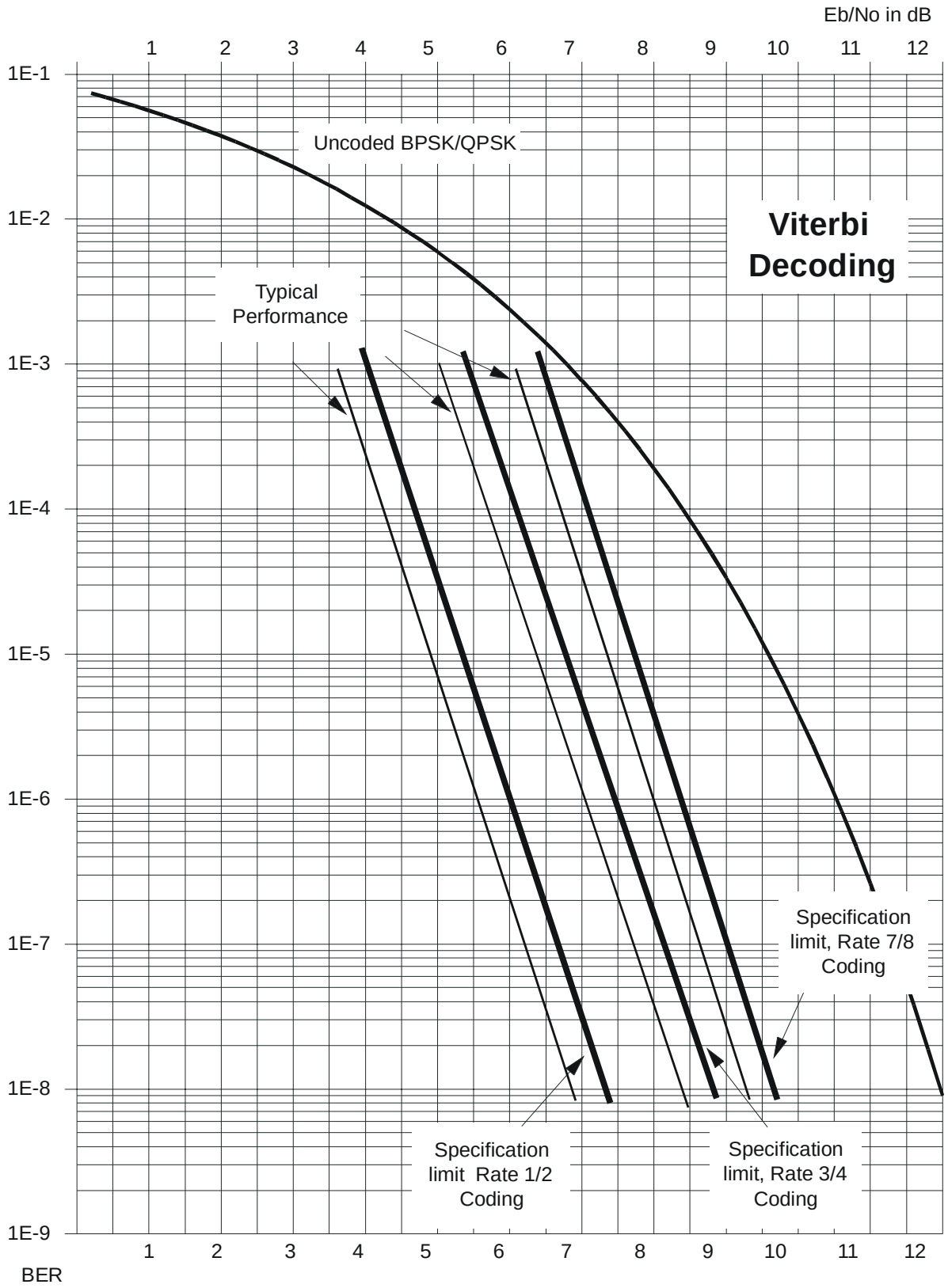


Figure 7-1. Viterbi Decoding

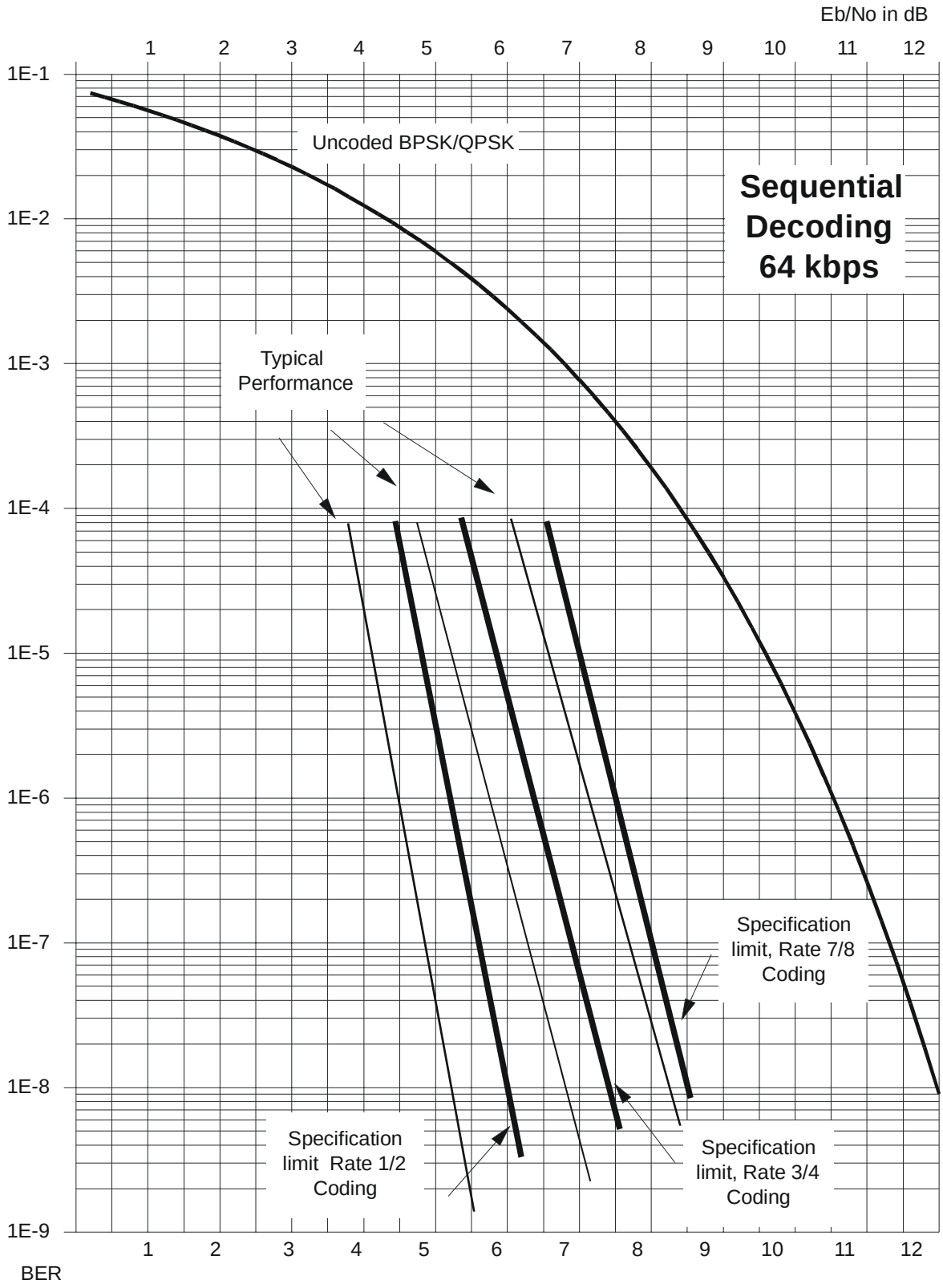


Figure 7-2. Sequential Decoding 64 kbps

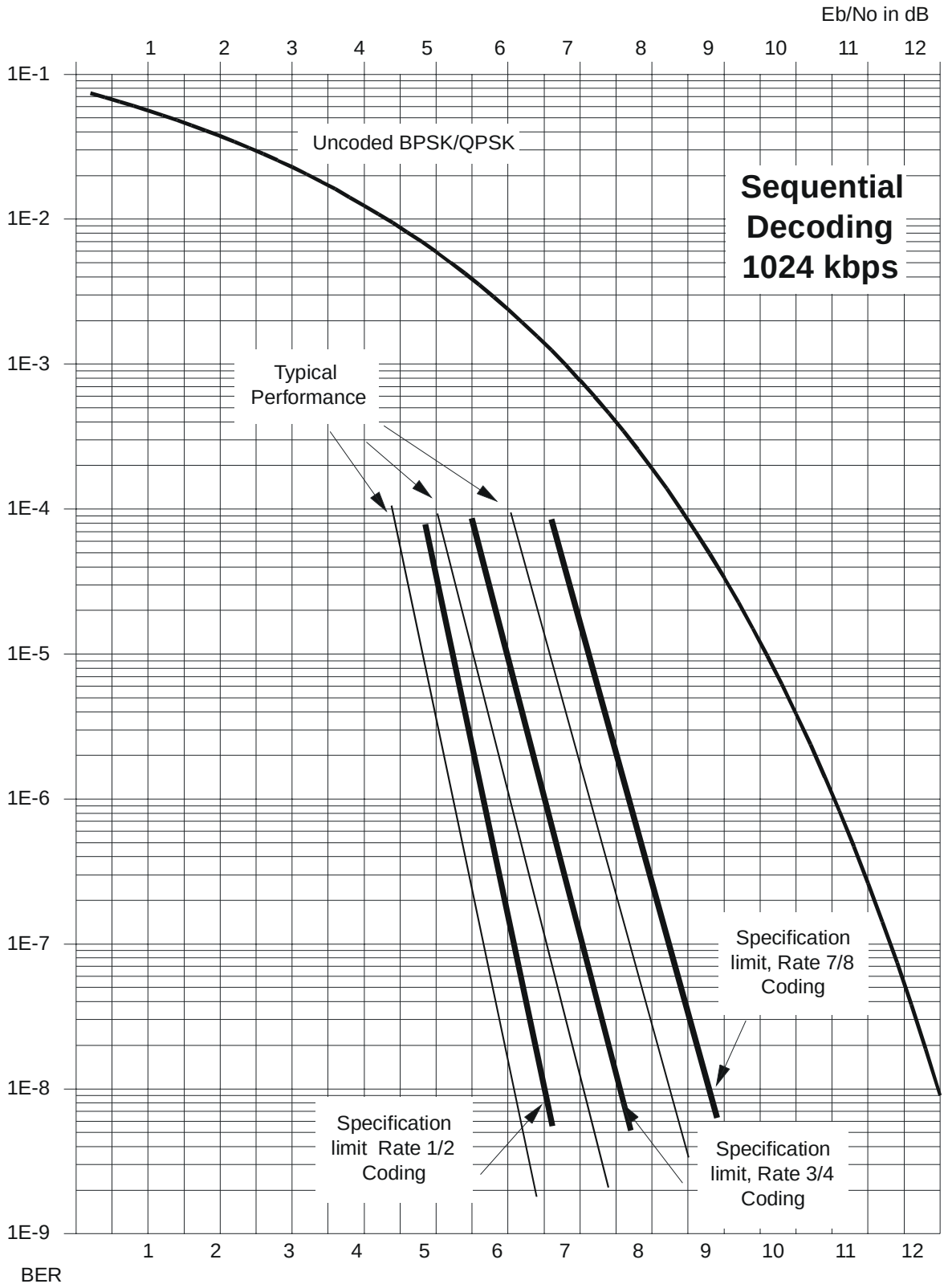


Figure 7-3. Sequential Decoding 1024 kbps

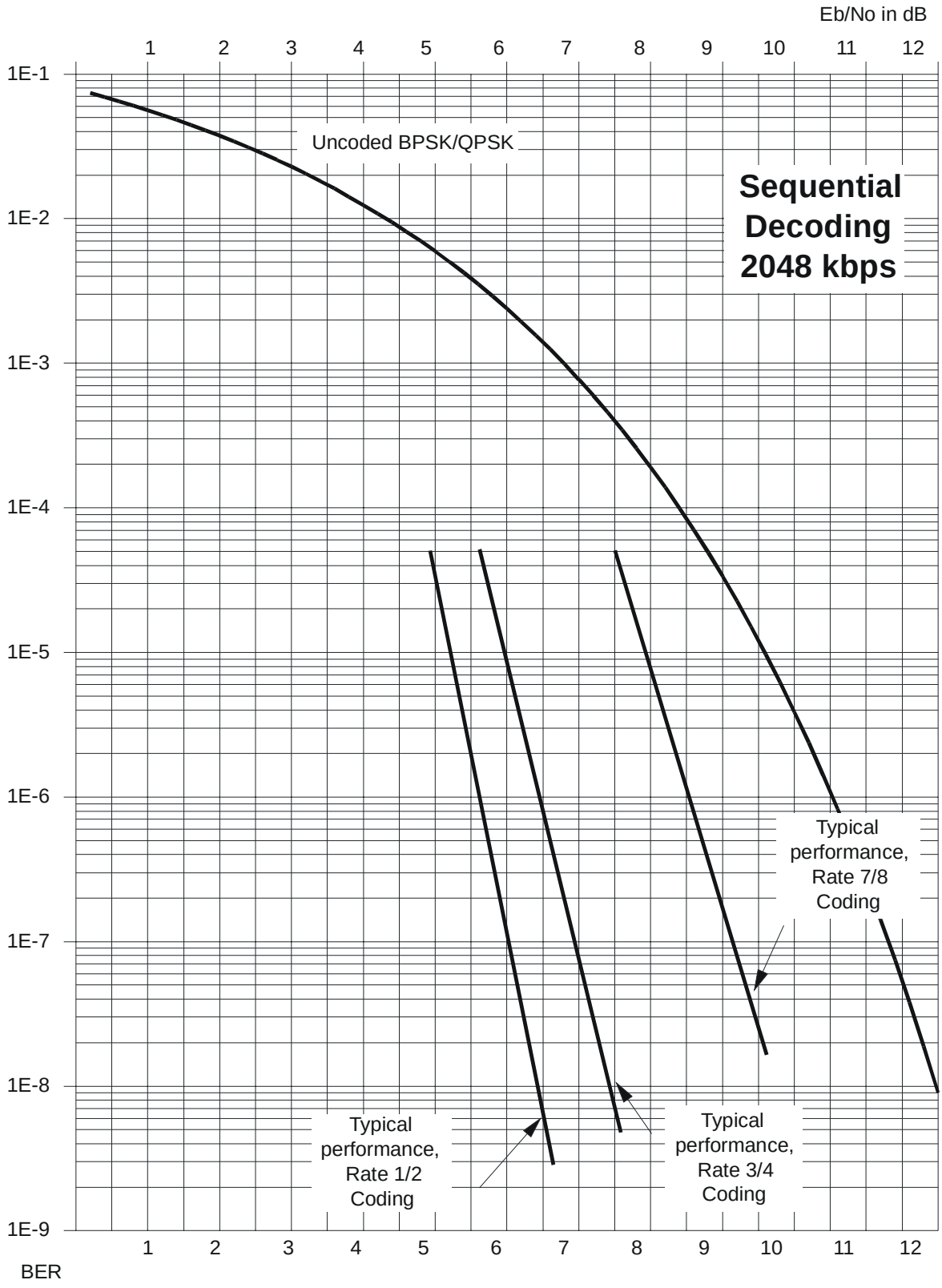


Figure 7-4. Sequential Decoding 2048 kbps

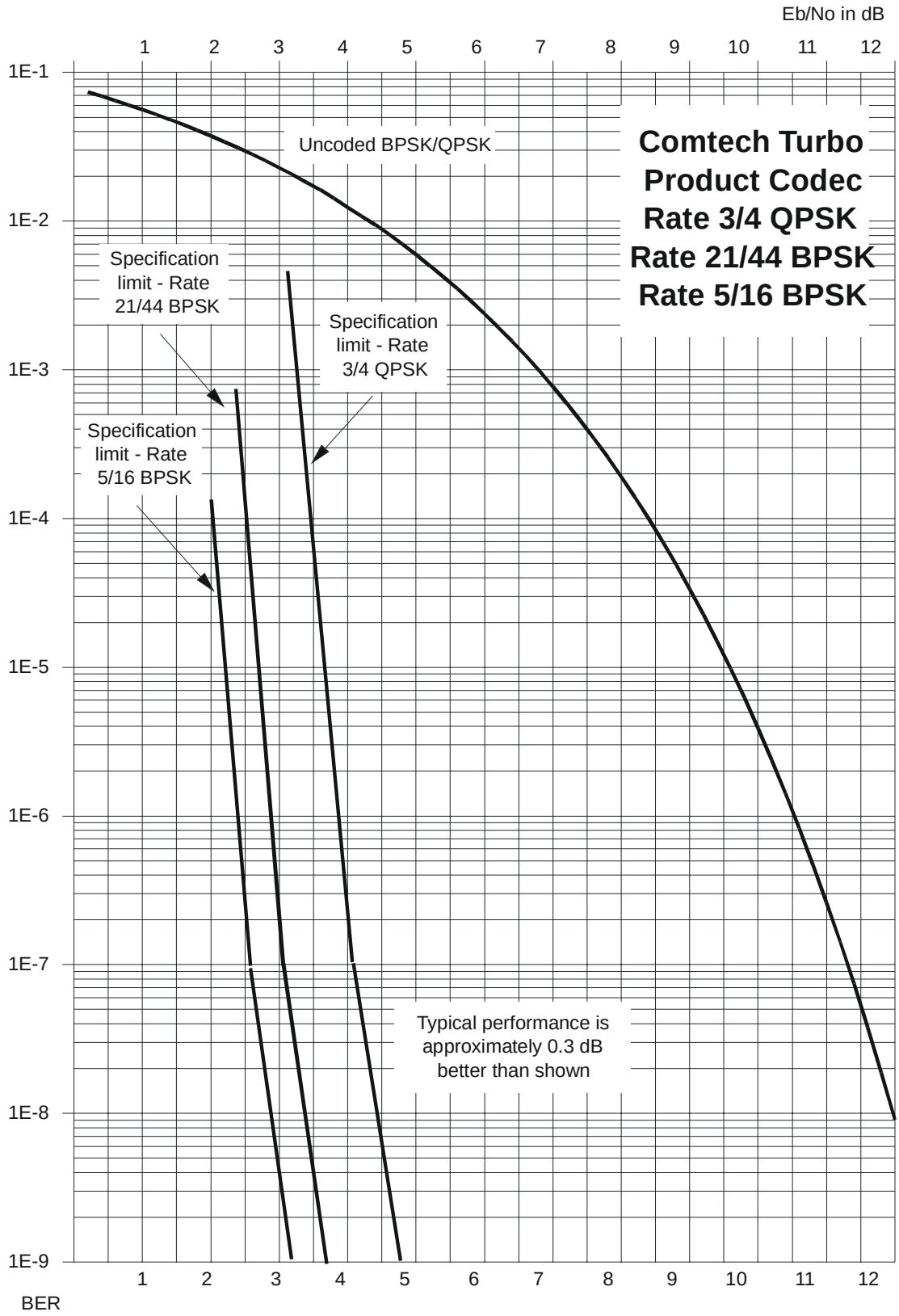


Figure 7-5. Comtech EF Data Turbo Product Codec

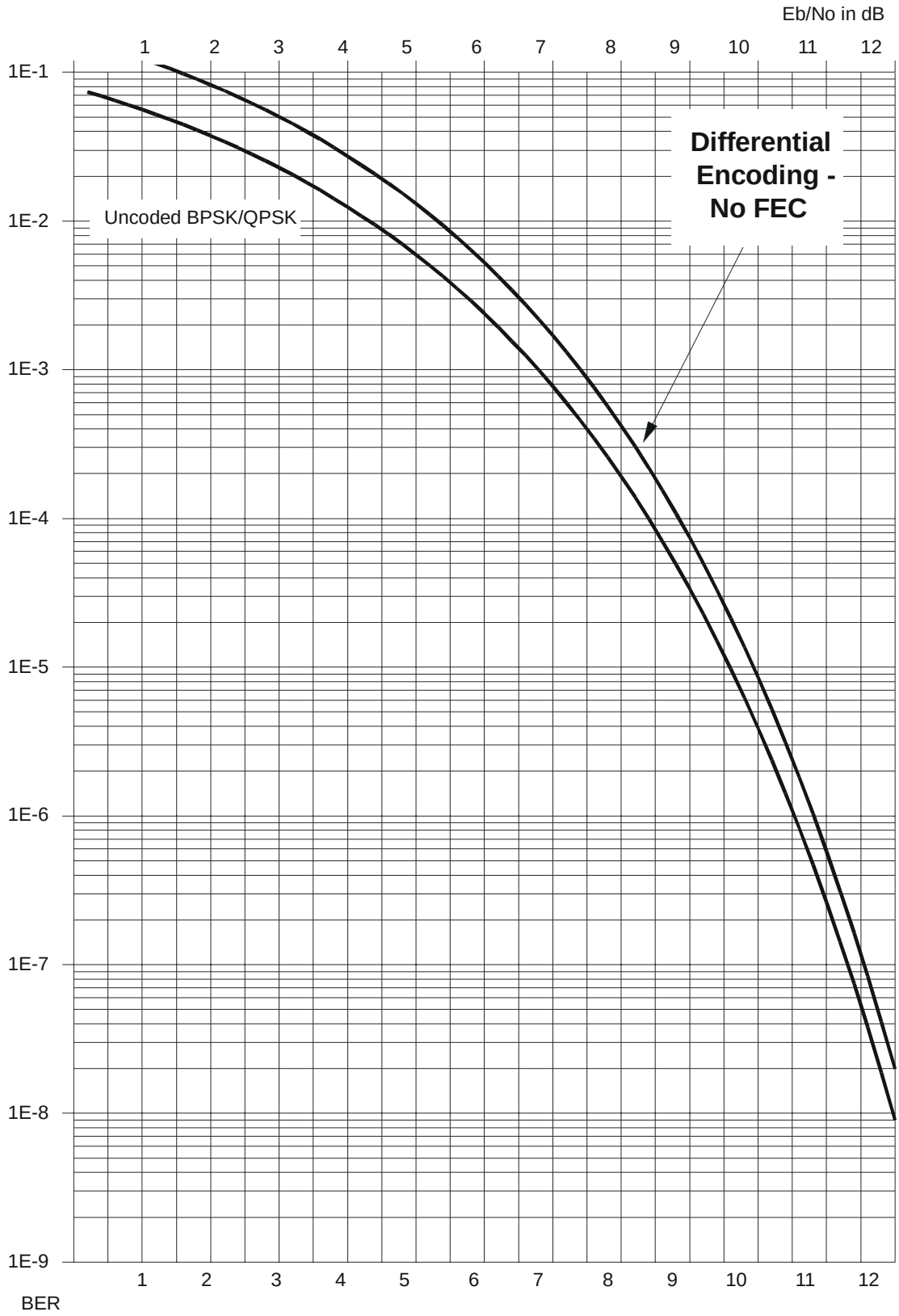


Figure 7-6. Differential Encoding No FEC

NOTES:

Chapter 8. EDMAC CHANNEL

8.1 THEORY OF OPERATION

As explained earlier, EDMAC is an acronym for Embedded Distant-end Monitor And Control. This is a feature which permits the user to access the M&C features of modems which are at the distant-end of a satellite link.

This is accomplished by adding extra information to the user's data, but in a manner which is completely transparent to the user.

8.1.1 ON THE TRANSMIT SIDE:

The data is split into frames - each frame containing 1008 bits (except Rate 21/44 BPSK Turbo, where the frame length is 2928 bits, and Rate 5/16 BPSK Turbo where the frame length is 3072 bits). 48 bits in each frame are overhead, and the rest of these bits are the user's data. This increases the rate of transmission by 5% (approximately 1.6% for the Turbo BPSK cases). For example, if the user's data rate is 64 kbps, the actual transmission rate will now be at 67.2 kbps.

At the start of each frame a 12 bit synchronization word is added. This allows the demodulator to find and lock to the start of frame. At regular intervals throughout the frame, additional data bytes and flag bits are added (a further 36 bits in total). It is these additional bytes which convey the M&C data.

When framing is used, the normal V.35 scrambler is no longer used. This V.35 approach is called 'self synchronizing', because in the receiver, no external information is required in order for the de-scrambling process to recover the original data. The disadvantage of this method is that it multiplies errors. On average, if one bit error is present at the input of the descrambler, 3 output errors are generated.

There is an alternative when the data is in a framed format. In this case, a different class of scrambler may be used - one which uses the start of frame information to start the scrambling process at an exact known state. In the receiver, having synchronized to the frame, the de-scrambler can begin its processing at exactly the right time. This method does not multiply errors, and therefore has a clear advantage over V.35 scrambling.

Adding the extra 5% to the transmitted data rate, the effective Eb/No seen by the user will degrade by a factor of 10log(1.05), or 0.21 dB (0.07dB in the case of the two BPSK Turbo rates). The use of an externally synchronized scrambler and descrambler almost exactly compensates for this degradation. The net effect is that the user will see effectively identical BER performance whether framing is used or not.

8.1.2 ON THE RECEIVE SIDE

When the demodulator locks to the incoming carrier, it must go through the additional step of searching for, and locking to the synchronization word. This uniquely identifies the start of frame, and permits the extraction of the overhead bytes and flag bits at the correct position within the frame. In addition, the start of frame permits the de-scrambler to correctly recover the data. The user's data is extracted, and sent through additional processing, in the normal manner. The extracted overhead bytes are examined to determine if they contain valid M&C bytes.

8.2 M&C CONNECTION

Data to be transmitted to the distant-end is sent to a local unit via the remote control port. A message for the distant-end is indistinguishable from a 'local' message - it has the same structure and content, only the address will identify it as being for a distant-end unit.

Before the M&C data can be successfully transmitted and received, pairs of units must be split into EDMAC Masters and EDMAC Slaves. Masters are local to the M&C Computer, and Slaves are distant-end.

Now, a unit which has been designated an EDMAC master not only responds to its own unique bus address, but it will also be configured to listen for the address which corresponds to its EDMAC Slave. When a complete message packet has be received by the EDMAC Master, it will begin to transmit this packet over the satellite channel, using the overhead bytes which become available.

Note: The 'normal' protocol for the message packet is not used over the satellite path, as it is subject to errors. For this reason, a much more robust protocol is used which incorporates extensive error checking.

At the distant-end, the EDMAC slave, configured for the correct address, receives these bytes, and when a complete packet has been received, it will take the action requested, and then send the appropriate response to the EDMAC Master, using the return overhead path on the satellite link. The EDMAC Master assembles the complete packet, and transmits the response back to the M&C Computer.

Apart from the round-trip satellite delay, the M&C Computer does not see any difference between local and distant-end units - it sends out a packet, addressed to a particular unit, and gets back a response. It can be seen that the EDMAC Master simply acts as forwarding service, in a manner which is completely transparent.

This approach does not require any additional cabling - connection is made using the normal M&C remote port. Furthermore, the user does not have to worry about configuring the baud rate of the M&C connection to match the lowest data rate modem in the system. The M&C system can have mixed data-rate modems, from 2.4 kbps to 2048 kbps, and still run at speeds in excess of 19,200 baud. It should be pointed out that at 2.4 kbps, the effective throughput of the overhead channel is only 11 async characters/second. For a message of 24 bytes, the time between sending a poll request and receiving a response will be around 5 seconds.

Note: When either of the BPSK Turbo rates are in use, the overhead rate is reduced by a factor of three, and therefore the response time will be around 15 seconds.)

8.3 SETUP SUMMARY

To access a distant-end unit:

Designate a Master/Slave pair - Master at the local-end, Slave at the distant-end.

On the local-end unit, enable framing, and EDMAC, define the unit as MASTER, then enter the bus address of the SLAVE. This is constrained to be ‘base 10' meaning that only addresses such as 10, 20, 30, 40 etc, are allowed.

Choose a unique bus address for the distant-end. This should normally be set to the ‘base 10' address + 1. For example, if the MASTER unit is set to 30, choose 31 for the distant-end unit.

On the distant-end unit, enable framing, and EDMAC, define the unit as SLAVE, then enter the bus address. The orange EDMAC Mode LED should be illuminated.

Set the local-end unit to RS485 remote control, and set the bus address of this local unit. The orange Remote Mode LED should be illuminated.

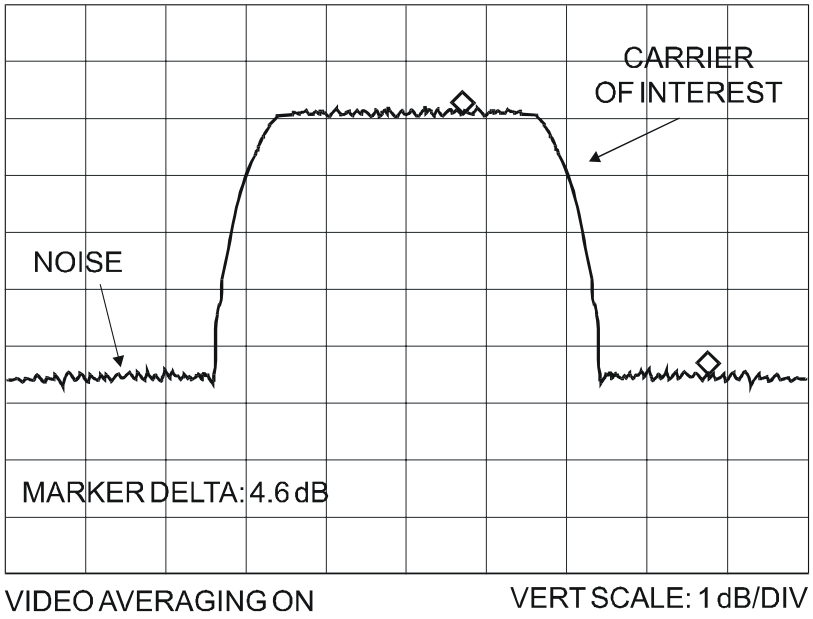
Once the satellite link has been established, connect the M&C Computer, and begin communications, with both the local and distant end units.

NOTE: EDMAC modes are fully compatible with AUPC modes.

Chapter 9. Eb/No Measurement

9.1 MEASURING EB/NO

Although the CiM-550 calculates and displays the value of receive Eb/No on the front panel of the unit, it is sometimes useful to measure the value using a spectrum analyzer, if one is available.



The idea is to accurately measure the value of (C+N)/N, (Carrier + Noise/Noise) and this is accomplished by tuning the center frequency of the Spectrum analyzer to the signal of interest, and measuring the difference between the peak spectral density of the signal (the flat part of the spectrum shown) and the noise density. To make this measurement, use a vertical scale of 1 or 2 dB/division, and use video filtering and/or video averaging to reduce the variance in the displayed sweep to a low enough level that the difference can be measured to within 0.2dB. Use this value of (C+N)/N in the table on the following page to determine the Eb/No. You will need to know the operating mode to read from the appropriate column.

In the diagram above, the (C+N)/N measured is 4.6 dB. If Rate 1/2 QPSK is being used, this would correspond to an Eb/No of approximately 2.6 dB.

(C+N)/N	Eb/No - Uncoded BPSK	Eb/No - Rate 1/2 BPSK	Eb/No - Uncoded QPSK	Eb/No - Rate 1/2 QPSK	Eb/No - Rate 3/4 QPSK	Eb/No - Rate 7/8 QPSK
3.0	0.0	3.0	-	0.0	-	-
3.5	0.9	3.9	-	0.9	-	-
4.0	1.8	4.8	-	1.8	0.0	-
4.5	2.6	5.6	-	2.6	0.8	0.1
5.0	3.3	6.3	0.3	3.3	1.5	0.8
5.5	4.1	7.1	1.1	4.1	2.3	1.6
6.0	4.7	7.7	1.7	4.7	2.9	2.2
6.5	5.4	8.4	2.4	5.4	3.6	2.9
7.0	6.0	9.0	3.0	6.0	4.2	3.5
7.5	6.6	9.6	3.6	6.6	4.8	4.1
8.0	7.3	10.3	4.3	7.3	5.5	4.8
8.5	7.8	10.8	4.8	7.8	6.0	5.3
9.0	8.4	11.4	5.4	8.4	6.6	5.9
9.5	9.0	12.0	6.0	9.0	7.2	6.5
10.0	9.5	12.5	6.5	9.5	7.7	7.0
10.5	10.1	13.1	7.1	10.1	8.3	7.6
11.0	10.6	13.6	7.6	10.6	8.8	8.1
11.5	11.2	14.2	8.2	11.2	9.4	8.7
12.0	11.7	14.7	8.7	11.7	9.9	9.2
12.5	12.2	15.2	9.2	12.2	10.4	9.7
13.0	12.8	15.8	9.8	12.8	11.0	10.3
13.5	13.3	16.3	10.3	13.3	11.5	10.8
14.0	13.8	16.8	10.8	13.8	12.0	11.3
14.5	14.3	17.3	11.3	14.3	12.5	11.8
15.0	14.9	17.9	11.9	14.9	13.1	12.4
15.5	15.4	18.4	12.4	15.4	13.6	12.9
16.0	15.9	18.9	12.9	15.9	14.1	13.4
16.5	16.4	19.4	13.4	16.4	14.6	13.9
17.0	16.9	19.9	13.9	16.9	15.1	14.4
17.5	17.4	20.4	14.4	17.4	15.6	14.9
18.0	17.9	20.9	14.9	17.9	16.1	15.4

Notes:
1. OQPSK values are the same as QPSK.
2. In framed (EDMAC)modes, no RS, add 0.2 dB to the values of Eb/No shown
3. In RS modes, no EDMAC, add 0.4 dB to the values of Eb/No shown.
4. In RS modes with EDMAC, add 0.6 dB to the values of Eb/No shown
5. Consult Factory for information on Rate 21/44 and Rate 5/16 Turbo BPS

Chapter 10. Connector Pinouts

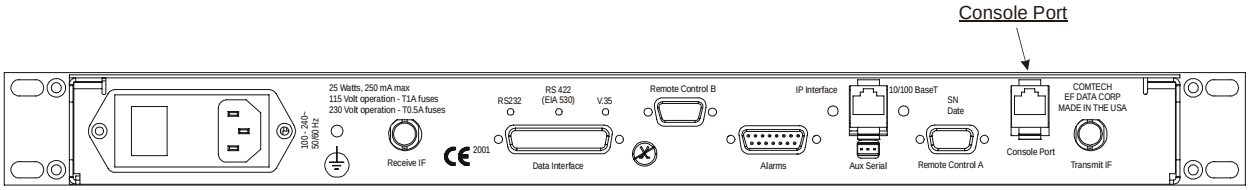


Figure 10-1. Rear Panel

10.1 DATA CONNECTOR - 25 PIN 'D' TYPE FEMALE

Table 10-1. Data Connector - 25 Pin 'D' Type Female

Pin	Generic Signal Description	Direction	EIA-422/ EIA 530	V.35	EIA-232	Circuit No
1	Shield	-	Shield	FG	AN	101
2	Transmit Data A	DTE to Modem	SD A	SD A	BA	103
3	Receive Data A	Modem to DTE	RD A	RD A	BB	104
7	Signal Ground	-	SG	SG	AB	102
8	Receiver Ready A	Modem to DTE	RR A	RLSD *	CF	109
9	Receive Clock B	Modem to DTE	RT B	SCR B	-	115
10	Receiver Ready B	Modem to DTE	RR B	-	-	109
11	Transmit Clock B	DTE to Modem	TT B	SCTE B	-	113
12	Internal Transmit Clock B	Modem to DTE	ST B	SCT B	-	114
14	Transmit Data B	DTE to Modem	SD B	SD B	-	103
15	Internal Transmit Clock A	Modem to DTE	ST A	SCT A	DB	114
16	Receive Data B	Modem to DTE	RD B	RD B	-	104

Pin	Generic Signal Description	Direction	EIA-422/ EIA 530	V.35	EIA-232	Circuit No
17	Receive Clock A	Modem to DTE	RT A	SCR A	DD	115
23	External Carrier Off (EIA-232 '1' or TTL 'low')	DTE to Modem	-	-	-	-
24	Transmit Clock A	DTE to Modem	TT A	SCTE A	DA	113

Notes:
1. Receiver ready is an EIA-232-level control signal on a V.35 interface.
2. DO NOT connect signals to pins which are not shown - these pins are reserved for use by the redundancy system.
3. 'B' signal lines are not used for EIA-232 applications.
4. For X.21 operation, use the EIA-422 pins, but ignore Receive Clock if the Modem is DTE, and ignore Transmit clocks if the Modem is DCE.

10.2 ALARMS CONNECTOR - 15 PIN 'D' TYPE MALE

Table 10-2. Alarms Connector - 15 Pin 'D' Type Male

Pin	Description
1	Ground
2	Receive AGC voltage
3	Receive Q sample (for constellation display)
4	Unit Fault Relay – Common
5	Unit Fault Relay – Normally Open
6	Transmit Traffic Relay - Normally Closed
7	Receive Traffic Relay - Common
8	Receive Traffic Relay - Normally Open
9	External Carrier Off input
10	---- No Connection ----
11	Receive I sample (for constellation display)
12	Unit Fault Relay – Normally Closed
13	Transmit Traffic Relay – Common
14	Transmit Traffic Relay - Normally Open
15	Receive Traffic Relay - Normally Closed

Note: 'Normally Open' refers to the NON-FAIL state

10.3 REMOTE CONTROL CONNECTOR - 9 PIN 'D' TYPE MALE

Table 10-3. Remote Control Connector - 9 Pin 'D' Type Male

Pin	Description
1	Ground
2	EIA-232 Transmit Data (Out)
3	EIA-232 Receive Data (In)
4	Reserved - do not connect to this pin
5	Ground
6	EIA-485 Receive Data B (In)
7	EIA-485 Receive Data A (In)
8	EIA-485 Transmit Data B (Out)
9	EIA-485 Transmit Data A (Out)

10.4 AUXILIARY SERIAL CONNECTOR – HE1402 3 PIN HEADER

Table 10-4. Auxiliary Serial Connector - He1402 3 Pin Header

Pin	Description
1	EIA-232 Transmit Data
2	Ground
3	EIA-232 Receive Data

10.5 ASYNC-SERIAL CONSOLE

The Console Connector is a RJ11-6 modular jack located on the rear panel. The Async-Serial Console interfaces the IP Telnet Configuration Port. This interface is a EIA-232 DCE interface.

Table 10-5. Async-Serial Console RJ11-6

Pin	Function
1	Ground
2	Rx
3	Tx
4	Ground
5	No used
6	Not used

10.6 ETHERNET INTERFACE CONNECTOR

The 10/100 BaseT Ethernet connector is a RJ45-8 modular jack located on the rear panel. This interface is used for data traffic and M & C. This interface is a Network Interface Card (NIC) pinout.

Table 10-6. Ethernet Interface RJ45-8

Pin	Function
1	Tx+
2	Tx-
3	Rx+
4	N/C
5	N/C
6	Rx-
7	N/C
8	N/C

Chapter 11.
CLI and Telnet Interface

11.1 OVERVIEW

This section defines the user menu system presented to a user connected to the CiM via a Terminal Emulator or telnet. In the process of configuring each parameter, an overview of the parameter and its impact on the configuration of the CiM is provided.

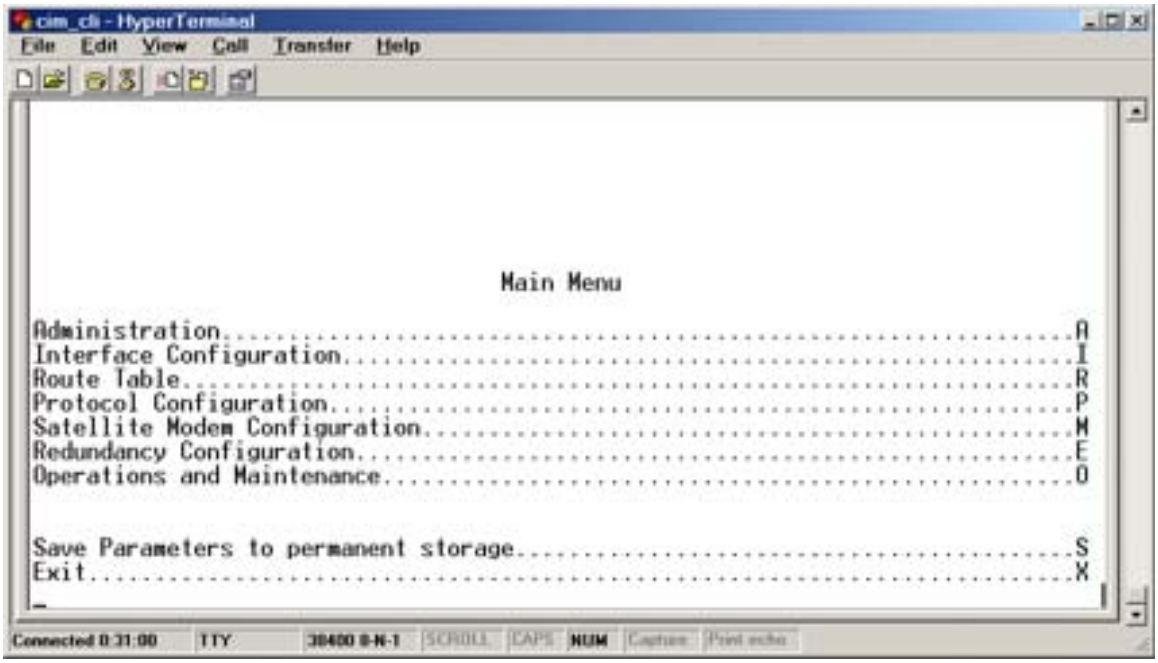
When connecting via a Terminal Emulator, the user should be physically attached to the Console Port of the CiM. The terminal emulator should be configured to match the console port setting . The default console port setting is 38,400 bps, 8 data bits, no parity, 1 stop bit and no flow control.

When connecting via telnet, the user should be physically attached to the Ethernet Port of the CiM. The Ethernet Speed Mode is a configurable parameter of the CiM and thus its exact setting can very between specific installations. The default setting allows the Ethernet port to auto negotiate its link speed on power-up.

The CiM does not allow concurrent access to the menu via telnet and the console port. If a user connects via telnet, CiM automatically disables the console port for the duration of the telnet session.

11.2 MAIN MENU PAGE

Menu pages are followed by a table listing the Menu Options/Fields, required Entry, and Descriptions.



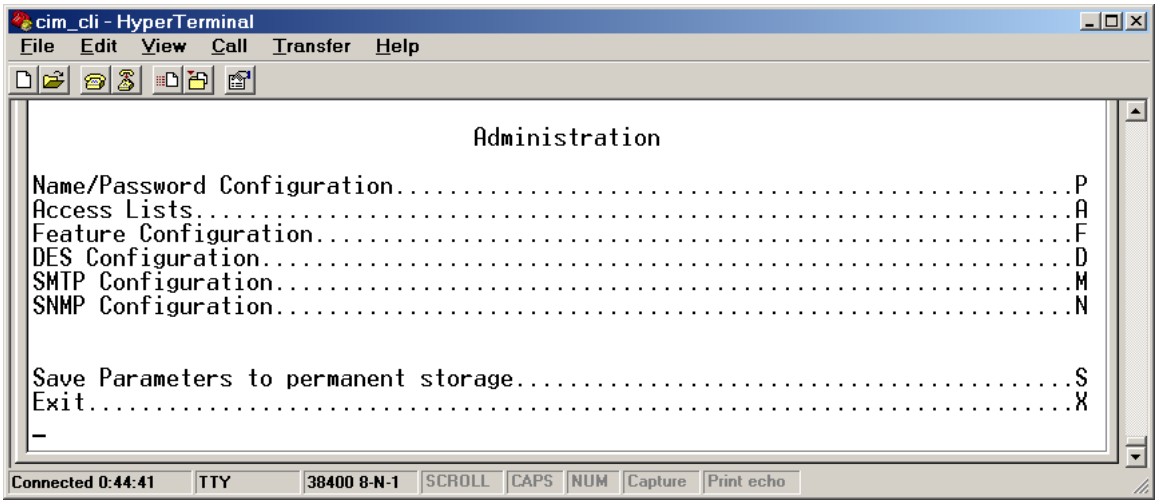
The *Main Menu* page has the following options/fields:

Menu Options/Fields	Entry	Description
Administration	**A**	The Administration menu provides a basic set of standard admin functions to the CiM. When connected via telnet, navigation to this menu will be restricted to the admin user.
Interface Configuration	**I**	Allows the user to configure the Ethernet and Satellite interfaces.
Route Table	**R**	Allows a user to define how the CIM will route packets that it receives on its Ethernet and HDLC interfaces.
Protocol Configuration	**P**	The Protocol Settings option allows the user to configure various protocols used by the CiM. These protocols currently include ARP and IGMP.
Satellite Modem Configuration	**M**	The Modem Parameters option displays a set of menus that allow a user to configure and monitor the satellite base modem.
Redundancy Configuration	**E**	The Redundancy Configuration option allows the user configure a CiM to coordinate its operation with another CiM to support a redundant link.
Operations and Maintenance	**O**	The Operations & Maintenance Menu allows a user to configure various options used to control and maintain the system.

Menu Options/Fields	Entry	Description
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1 ADMINISTRATION PAGE

The *Administration* page is activated from the *Main Menu* page.



Note: Access to the Administration page is restricted to the Admin user when connecting via the telnet interface. The Administration page is available to all users when connected via the Terminal Emulator (serial) connection.

The *Administration* page contains the following options/fields.

Menu Options/Fields	Entry	Description
Name/Password Configuration	**P**	Activates *Name/Password Configuration* page. Allows the user to define the user name and passwords that are required in order to access the management interfaces on the CiM.
Access Lists	**A**	Activates *Access Lists* page. Allows the user to restrict access to the management interfaces on the CiM based upon the requesters IP address.
Feature Configuration	**F**	Activates *Feature Configuration* page.
DES Configuration	**D**	The DES Configuration Page allows the user to determine if DES encryption is enabled on a device and if so, the DES keys that are used to decrypt traffic. The keys specified for the transmit function of the CiM are completely independent for the DES keys specified for the receiver function.
SMTP Configuration	**M**	The SMTP configuration page allows the user to specify appropriate settings for SMTP.
SNMP	**N**	The SNMP configuration page allows the user to specify management parameters for SNMP.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.

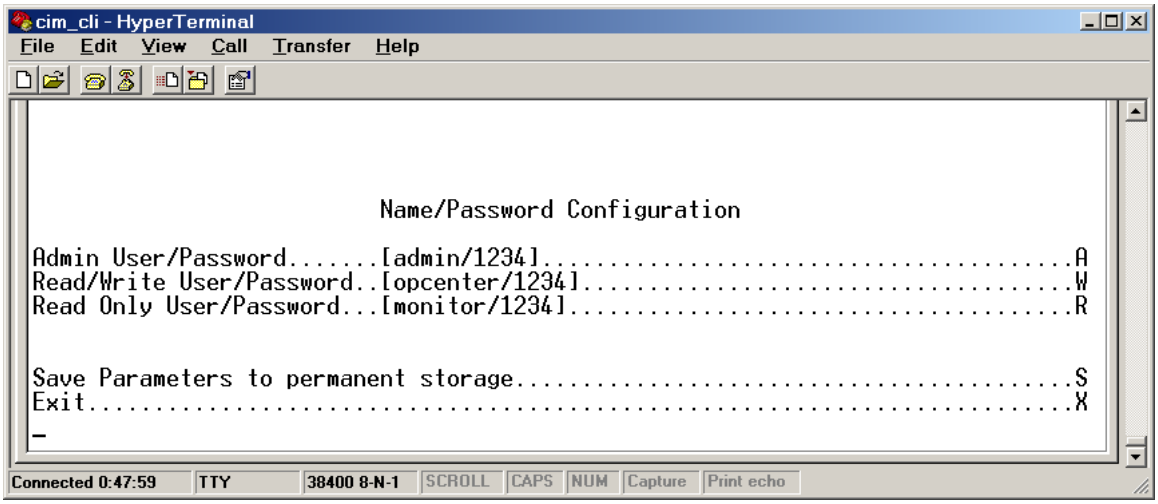
Menu Options/Fields	Entry	Description
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.1 NAME/PASSWORD CONFIGURATION PAGE

The *Name/Password Configuration* page is activated from the *Administration* page.

This option allows an operator to define the passwords required to access the CiM via telnet, HTML, FTP, SNMP, and TELNET.

Note: The SNMP Community string used to access the CiM is defined as the concatenation of the username and password. For example, if the Admin User Name is “comtech” and the Admin User Password is “donttell” then the SNMP Community string would be “comtechdonttell”.



The *Name/Password Configuration* Page contains the following options/fields:

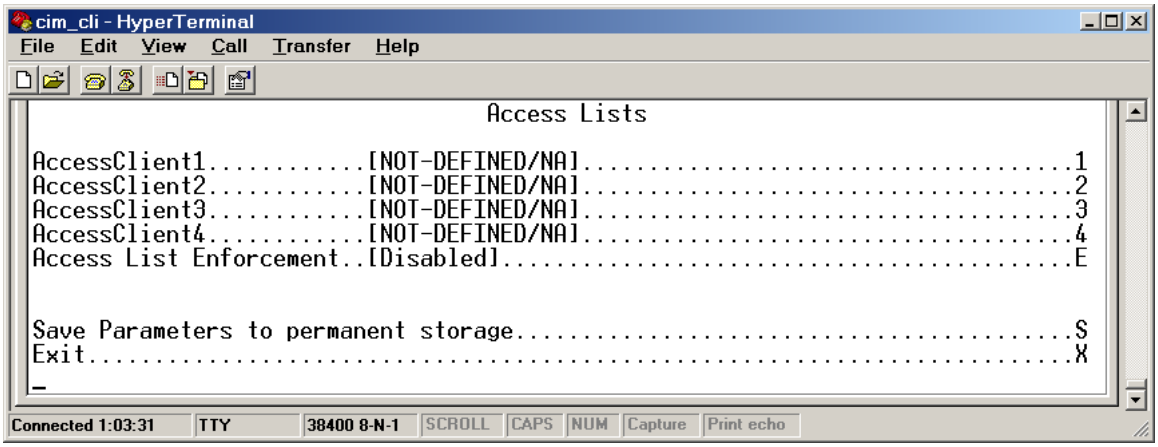
Menu Options/Fields	Entry	Description
Admin User/Password	**A**	Enter the username and passwd with a space delimiter Ex: <user> <passwd> Enter NONE NONE to erase The Admin user has access to all functionality in the system.
Read/Write User/Password	**W**	Enter the username and passwd with a space delimiter Ex: <user> <passwd> Enter NONE NONE to erase The Read/Write user has access permission to modify all attributes in the system, except all of the menus underneath the Administration menu.
Read Only User/Password	**R**	Enter the username and passwd with a space delimiter Ex: <user> <passwd> Enter NONE NONE to erase The Read/Only user

Menu Options/Fields	Entry	Description
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.2

11.2.1.3 ACCESS LISTS PAGE

The *Access Lists* page is activated from the *Administration* page. This page allows the operator to configure the CiM to limit monitor and control access to the unit from a specified list of authorized clients.



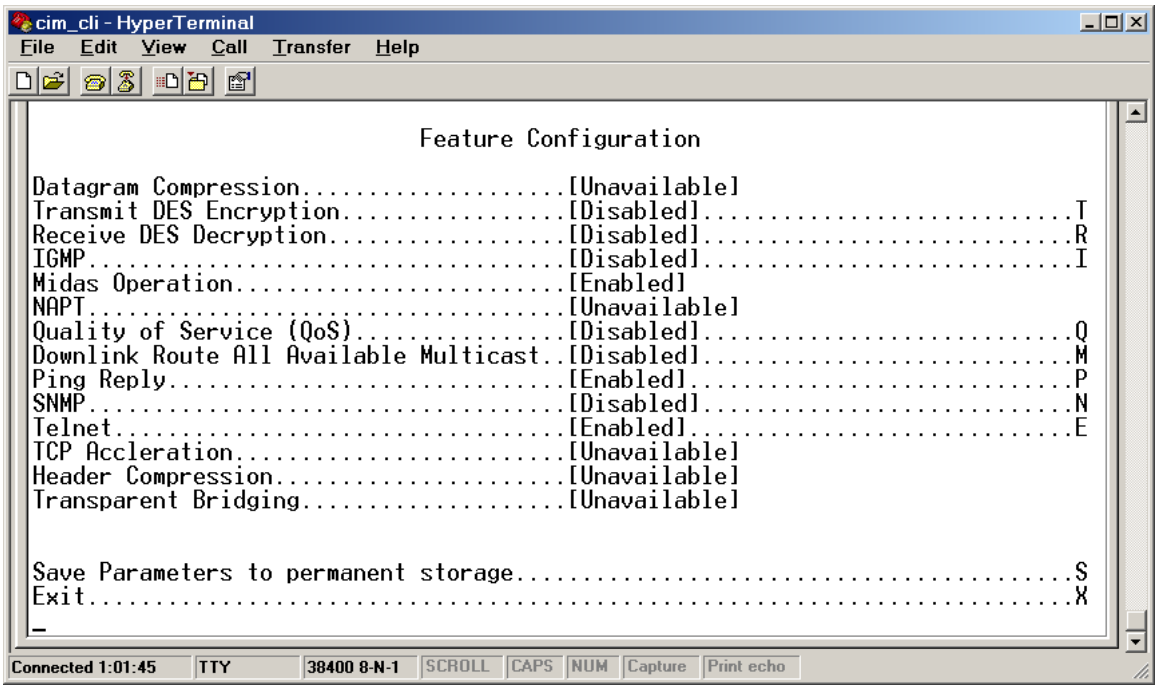
Note: If connecting to the CiM remotely, the IP address of the machine used to manage the CiM should be included in the Access List.

The *Access Lists* page contains the following options/fields:

Menu Options/Fields	Entry	Description
AccessClient1 - 4	**1 - 4**	The Access Client list allows an operator to define which remote clients can connect to a CiM when the Access List Enforcement is enabled. Each entry allows an operator to specify an IP Address and a subnet mask to define a unique class of machines that are allowed access to the CiM. For example, if an operator wanted to grant access to a PC with an IP Address of 10.10.10.1 and any PC on a subnet of 192.168.10.xxx, then the Access List would be defined as: AccessClient1 …[10.10.10.1/32] AccessClient2….[192.168.10.0/24]
Access List Enforcement	**E**	The Access List Enforcement allows an operator to grant access to the CiM via ping, telnet, HTML, FTP, and SNMP to a well-defined list of client machines. Access List Enforcement toggles between [Enabled] and [Disabled].If disabled, then any client machine will able to connect to the CiM via ping, telnet, HTML, FTP, and SNMP. If enabled, then only those machines specified in the Access Client List will be allowed to connect to the CiM via ping, telnet, HTML, and SNMP.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.4 FEATURE CONFIGURATION PAGE

The *Feature Configuration* page is activated from the *Administration* page.



The Feature Configuration menu communicates to the user the current availability for each of the features. If a feature is marked “Unavailable” and it has a letter, Transmit DES Encryption for example, then the feature is a FAST feature. FAST features must be purchased from Comtech EF Data. “Unavailable” features without a letter, Datagram Compression for example, will be available in a follow-on release.

The *Feature Configuration* menu contains the following options/fields:

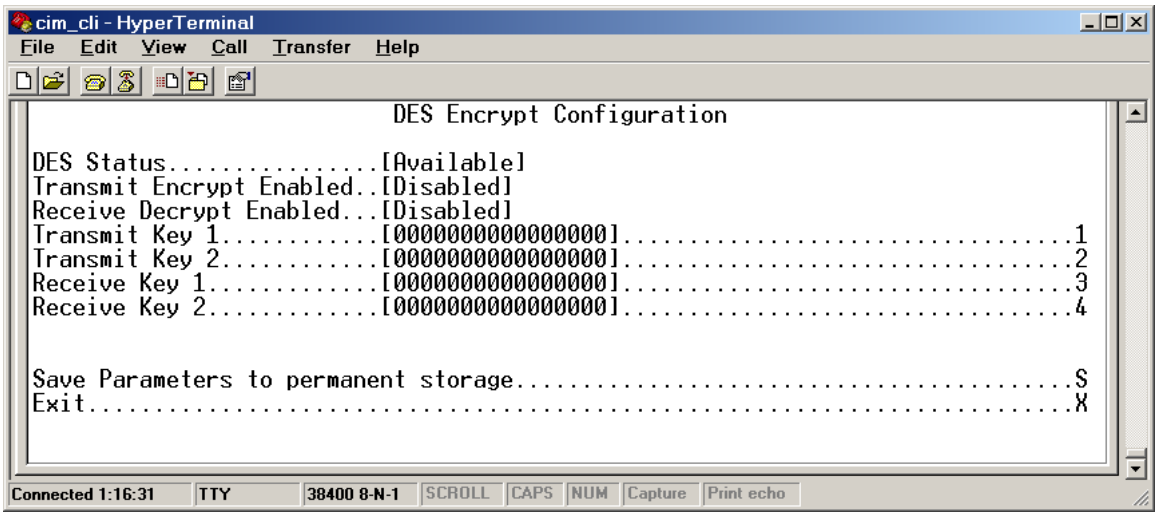
Menu Options/Fields	Entry	Description
Datagram Compression	**Read Only**	Unavailable
Transmit DES Encryption	**T**	Toggles [Enabled] and [Disabled] This feature must be purchased. Enabled tells the CiM to encrypt packets being sent over the Satellite Interface. Disabled tells the CiM not to encrypt packets being sent over the Satellite interface.
Receive DES Encryption	**R**	Toggles [Enabled] and [Disabled] This feature must be purchased. Enabled tells the CiM to decrypt packets being received from the Satellite Interface. Disabled tells the CiM not to decrypt packets received from the Satellite Interface.

Menu Options/Fields	Entry	Description
IGMP	**I**	Toggles [Enabled] and [Disabled] This feature must be purchased. The receive portion of a CiM will utilize the CiM as an IGMP server. The transmit portion of a CiM will utilize the CiM as an IGMP client. The *IGMP Information* Page configures the CiM to report an interest to join a Multicast group on an IGMP server. The IGMP protocol is used to regulate Multicast traffic on a LAN segment to prevent information of no interest from consuming bandwidth on the LAN.
Midas Operation	**Read Only**	Enabled
NAPT	**Read Only**	Unavailable
Quality of Service (QOS)	**Q**	Toggles [Enabled] and [Disabled]. This feature must be purchased. Enabled tells the CiM to apply configured QOS parameters on all packets going out the Satellite Interface. Disabled tells the CiM to not apply QOS restrictions against outgoing packets.
Downlink Route All Available Multicast	**M**	Toggles [Enabled] and [Disabled] Enabled tells the CiM to route all Multicast packets coming from the Satellite interface to the Ethernet LAN regardless of the Route Table entries. Disabled tells the CiM not to route all Multicast packets. This mode will still route multicast packets if multicast route exists in the Route Table.
Ping Reply	**P**	Toggles [Enabled] and [Disabled] Enabled tells the CiM to respond to ping requests directed to the CiM itself (Ethernet and Satellite Interfaces). Disabled tells the CiM not to respond to ping requests. This is used as a security feature to discourage unauthorized parities from determining if a CiM exists via the ping utility.
SNMP	**N**	Toggles [Enabled] and [Disabled] Enabled tells the CiM to respond to SNMP requests against the CiM's private MIB. Disabled tells the CiM not to respond to SNMP requests against the CiM's private MIB.
Telnet	**E**	Toggles [Enabled] and [Disabled] Enabled tells the CiM to provide access via telnet. Disabled tells the CiM to not allow access via telnet.

Menu Options/Fields	Entry	Description
TCP Acceleration	**Read Only**	Unavailable
Header Compression	**Read Only**	Unavailable
Easy Connect™		Unavailable
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.5 DES ENCRYPT CONFIGURATION PAGE

The *DES Encrypt Configuration* page is activated from the *Administration* page.



Note: This menu will only be accessible if the DES FAST feature has been purchased and the license key has been entered through the modem front panel.

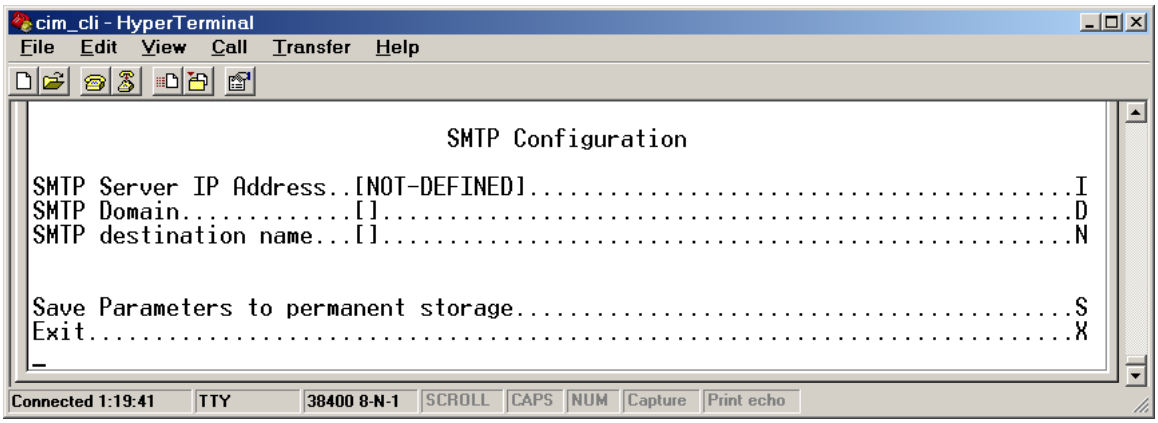
The *DES Encrypt Configuration* contains the following options/fields:

Menu Options/Fields	Entry	Description
DES Status	**Read Only**	Displays status, [Available] or [Unavailable]. Available is displayed when the DES feature has been installed. Disable is displayed when the DES feature has not been installed.
Transmit Encrypt Enabled	**Read Only**	Displays feature status. This field is updates via the *Features Configuration* menu. If Transmit Encrypt is disabled, then all traffic processed by the CiM will be transmitted in the clear regardless of the DES encryption key specified in the route table.
Receive Decrypt Enabled	**Read Only**	Displays feature status. This field is updates via the *Features Configuration* menu.
Transmit Key 1 -2	**1, 2**	These DES keys are used to encrypt traffic being sent over the Satellite Interface. Information processed by the CiM can be encrypted using one of two well-defined system keys for data transmitted by the CiM. The Set Key 1/Set Key 2 field allows the user to specify the value of the key used to encrypt packets that specify Key1/Key2 in the QoS/DES table. The key is entered in HEX (16 digits max)
Receive Key 1 - 2	**3, 4**	These DES keys are used to decrypt traffic being received from the Satellite Interface.

Menu Options/Fields	Entry	Description
		The key is entered in HEX (16 digits max)
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.6 SMTP

The *SMTP Configuration* page is activated from the *Administration* page.

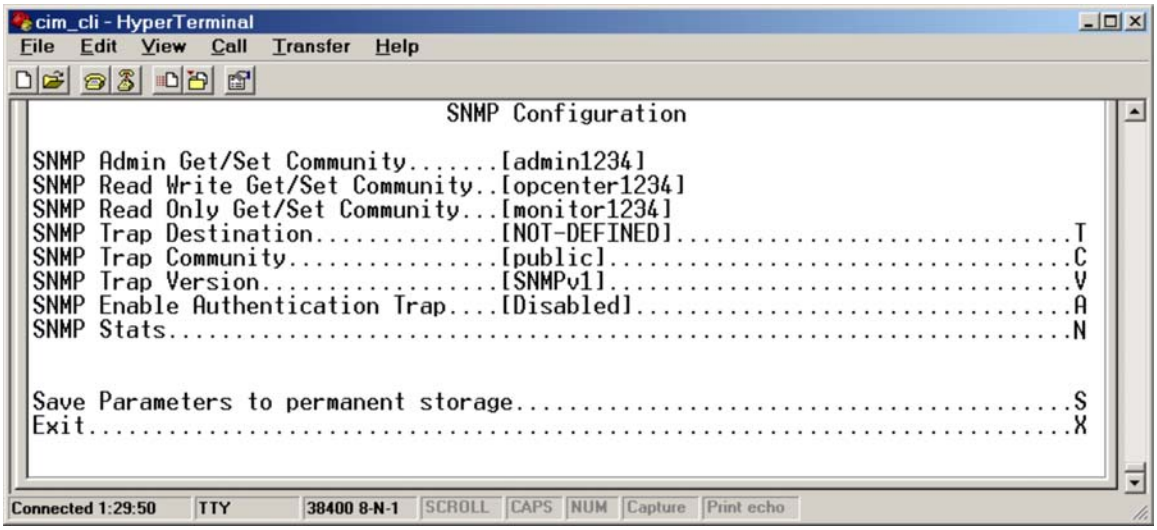


The *SMTP Configuration* contains the following options/fields:

Menu Options/Fields	Entry	Description
SMTP Server IP Address	**I**	Not Defined
SMTP Domain	**D**	Set to the domain of the email server (usually found to the right of the @ symbol in an email address).
SMTP Destination Name	**N**	Set the email recipient names (usually found to the left of the @ symbol in an email address).
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.1.7 SNMP

The *SNMP Configuration* page is activated from the *Administration* page.



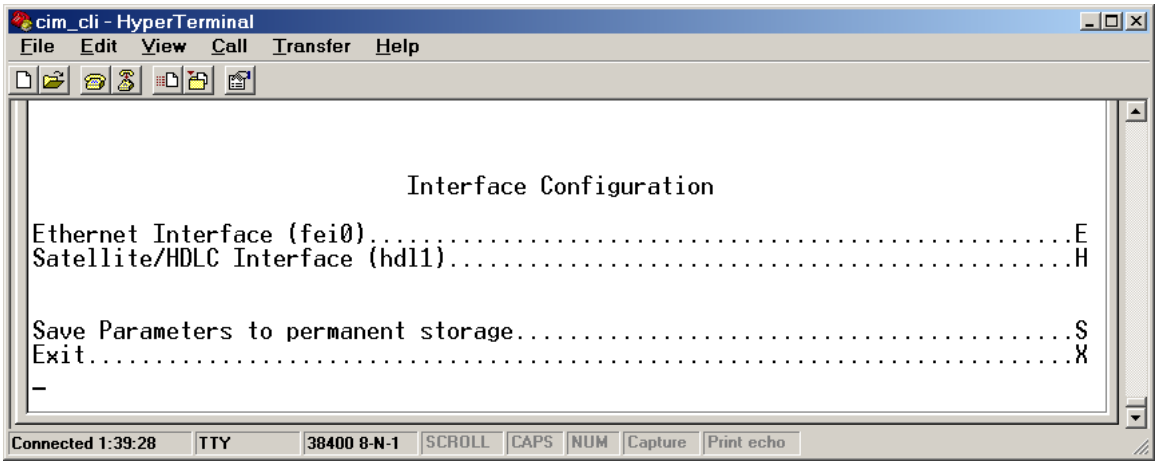
The *SNMP Configuration* contains the following options/fields:

Menu Options/Fields	Entry	Description
SNMP Admin Get/Set Community	**Read Only**	GET and SET community string for Admin user. This community string allows GET/SET operations to all portions of the cimController and cim550 MIBs.
SNMP Read Write Get/Set Community	**Read Only**	GET and SET community string for Read Write user. This community string allows GET/SET operations to all portions of the cimController and cim550 MIBs, except for the cimAdministration section in the cimController MIB.
SNMP Read Only Get/Set Community	**Read Only**	GET and SET community string for Read Only user. This community string allows GET operations in the cim550 MIB only.
SNMP Trap Destination	**T**	IP address where all traps/notifications will be sent. If a network management application is running in the network, it should be configured to receive traps and its IP address should be entered here.
SNMP Trap Community	**C**	Community string which will be set in the Community field of all outgoing traps. This field on the trap PDU may be checked by the network manager application to determine if the trap came from a “trusted” agent.
SNMP trap Version	**V**	Determines whether a SNMPv1 trap or SMNPv2 notification is sent.
SNMP Enable Authentication Trap	**A**	Determines whether a MIB2 authentication trap will be sent when a PDU with an invalid community string is encountered. A community string is invalid when it does not match the Admin, the Read Write, or the Read Only community strings.

Menu Options/Fields	Entry	Description
SNMP Stats	**N**	Displays statistics concerning the operation of the SNMP agent (number of IN SNMP packets, number of OUT SNMP packets, number of OUT Traps, etc…)
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.2 INTERFACE CONFIGURATION PAGE

The *Interface Configuration* page is activated from the *Main Menu* page.

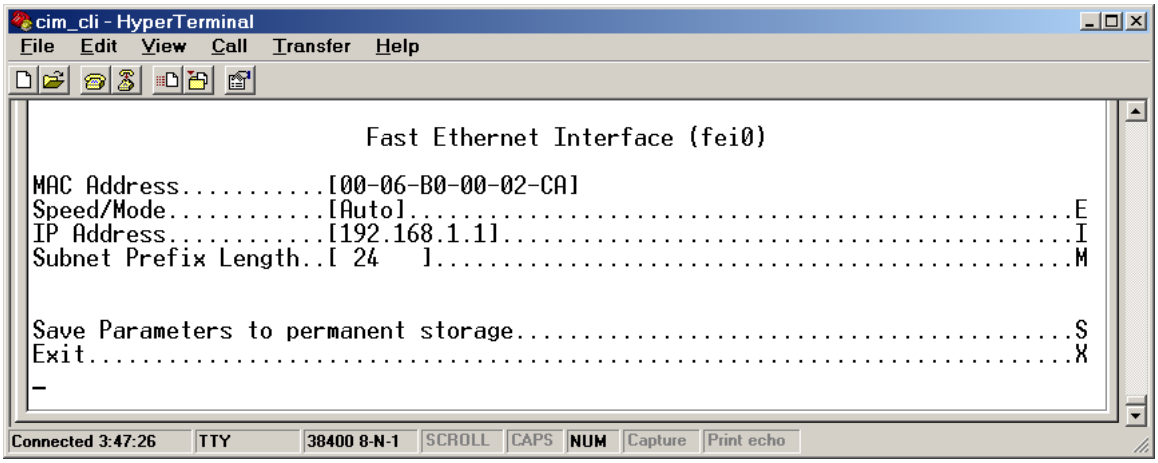


The *Interface Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Ethernet Interface (fei0)	**E**	Activates *Fast Ethernet* page.
Satellite/HDLC Interface (hdl1)	**H**	Activates *Satellite/HDLC Interface* page.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.2.1 FAST ETHERNET INTERFACE (FEI0) PAGE

The *Fast Ethernet Interface* page is activated from the *Interface Configuration* page.

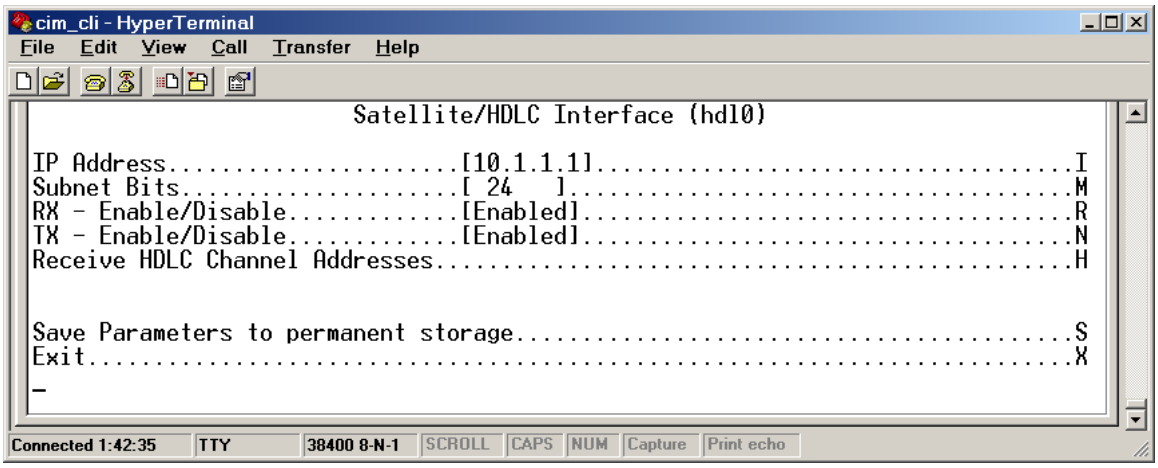


The *Fast Ethernet Interface* page contains the following options/fields:

Menu Options/Fields	Entry	Description
MAC Address	**Read Only**	The MAC Address defines the hardware destination MAC Address that is used when an Ethernet packet is destined for the CiM Ethernet Interface. This address is unique and has been assigned permanently at the factory.
Speed/Mode	**E**	The Ethernet Speed Mode is a configurable parameter of the CiM and thus its exact setting can very between specific installations. The default setting allows the Ethernet port to auto negotiate its link speed on power-up. Selections are: 1 -- Auto 2 -- 10 MB/sec Half Duplex 3 -- 100 MB/sec Half Duplex 4 -- 10 MB/sec Full Duplex 5 -- 100 MB/sec Full Duplex
IP Address	**I**	This is the IP Address assigned the CiM Ethernet Interface. Enter the ip address in aaa.bbb.ccc.ddd format
Subnet Prefix Length	**M**	Specifies the Subnet Mask assigned to the Ethernet Interface of the CiM. Enter the subnet mask prefix length (8..30)
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.2.2 SATELLITE/HDLC INTERFACE (HDL1) PAGE

The *Satellite/HDLC Interface (hdl1)* page is activated from the *Interface Configuration* page.



The *Satellite/HDLC Interface* page contains the following options/fields:

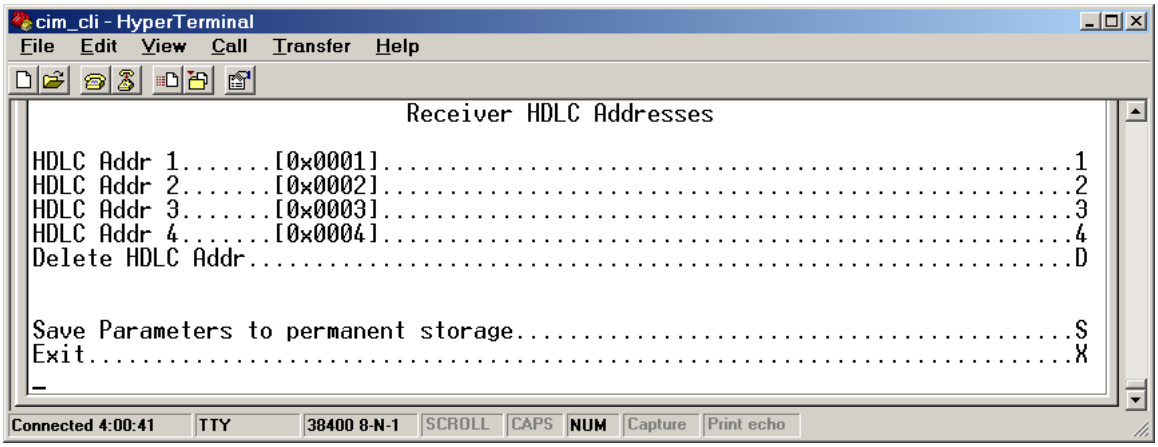
Menu Options/Fields	Entry	Description
IP Address	**I**	Specifies the IP Address assigned to the Satellite Interface of the CiM. The only requirement of the Satellite IP Address is that it not be on the same subnet as the Ethernet Interface and that it is on the same subnet as the IP address assigned to the Satellite interface of the CiM on the other side of the Satellite link. Since the only devices communicating on the HDLC link are a other CiMs, the Satellite IP address can usually be an arbitrary address assigned to many different systems. However, because of the possibility of conflict with an assigned Ethernet IP Address or the IP Address of a defined route, the user can select this value. If a PC is attached to the subnet of the Ethernet Interface of the CiM, then that PC will be able to ping CiM via its Satellite IP address if the following command is executed from a DOS prompt on that PC. Route add <Satellite_IP_Address> mask 255.255.255.255 <Ethernet_MAC_Address> where the Satellite_IP_Address and Ethernet MAC Address refer to the respective settings of the CiM. Enter the ip address in aaa.bbb.ccc.ddd format
Subnet Mask	**M**	Specifies the Subnet Mask assigned to the Satellite Interface of the CiM. Enter the subnet mask prefix length (8..30)
RX – Enable/Disable	**R**	Toggles [Enabled] and [Disabled]

Menu Options/Fields	Entry	Description
		Enabled tells the CiM to receive and process packets from the Satellite Interface. Disabled tells the CiM to discard and not process packets from the Satellite Interface. **Note:** This comment does not disable the modem.
TX – Enable/Disable	**N**	Toggles [Enabled] and [Disabled] Enabled tells the CiM to allow routing of packets from its Ethernet interface to its Satellite interface. Disabled tells the CiM to not allow routing of packets from its Ethernet interface to its Satellite interface. **Note:** This comment does not disable the modem.
Receive HDLC Channel Addresses	**H**	Activates *Receiver HDLC Addresses* page.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.2.3 RECEIVER HDLC ADDRESSES PAGE

The *Receiver HDLC Addresses* page is activated from the *Satellite/HDLC Interface* page.

This page allows the user to define up to four HDLC addresses that can carry user information on the Satellite Interface.

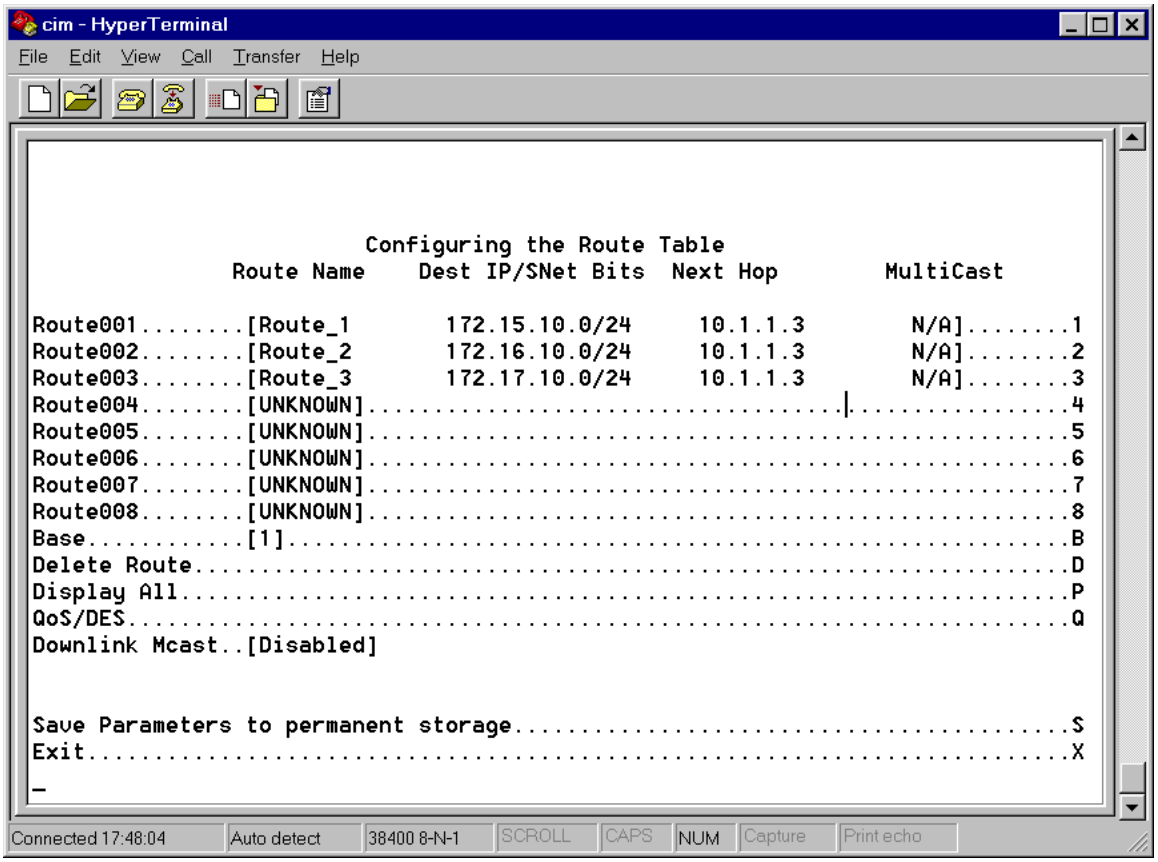


The *Satellite/HDLC Interface* page contains the following options/fields:

Menu Options/Fields	Entry	Description
HDLC Addr 1 - 4	**1 - 4**	HDLC address in hex <1 - FFFE, enter = 0001>
Delete HDLC Addr	**D**	Enter the HDLC entry to delete <1..4>
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.3 ROUTE TABLE CONFIGURATION PAGE

The *Route Table Configuration* page is activated from the *Main Menu* page.



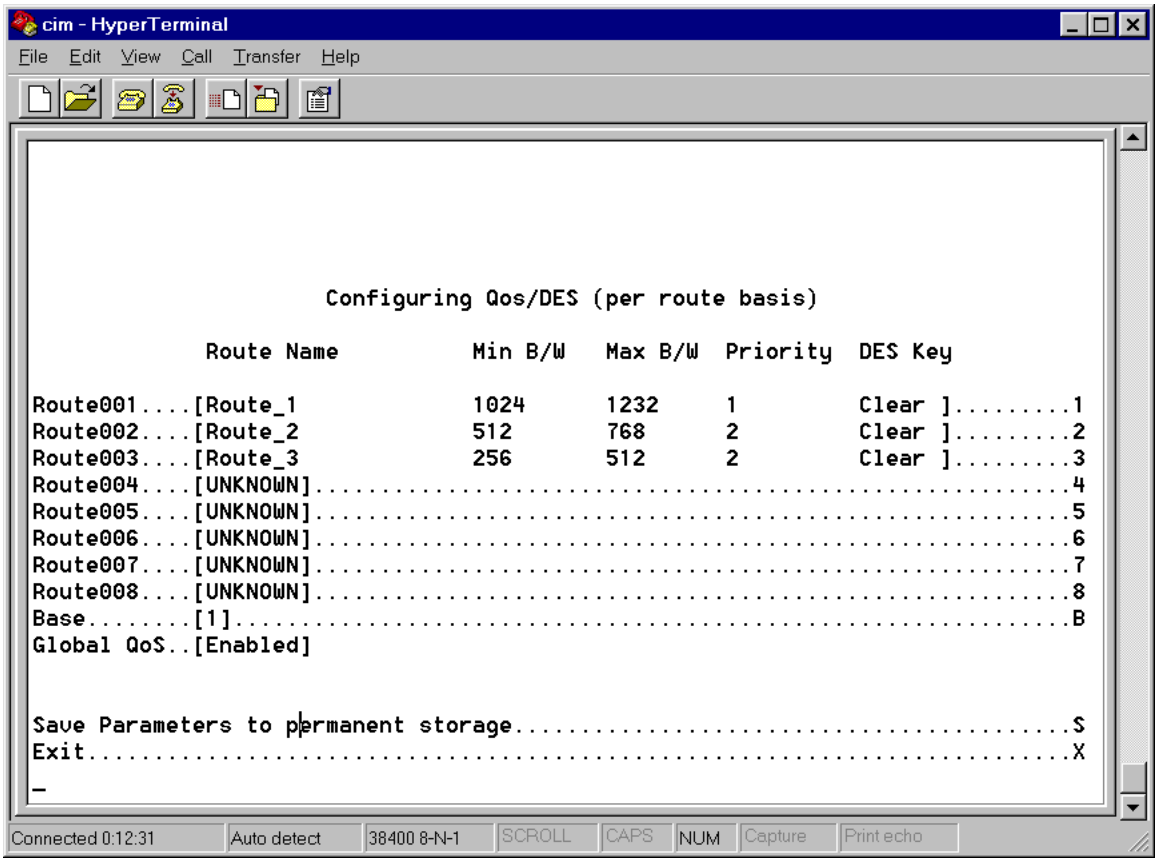
The *Route Table Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Route001-Route008 (The 8 currently displayed routes)	**1-8**	The Route Table allows a user to define how the packets that the CiM receives are routed. Defining an entry in this table is similar to the using the 'route add' command of machines that support that command. For each route, the user must define 1. A name assigned by the user to reference the route. The assigned name can not contain any whitespace and must be unique. 2. The destination address of an IP packet of interest. The number of network addresses that are governed by the selected destination entry i.e. subnet mask. The Next Hop IP address. This is the IP where the packet will be routed to for further processing. The Next Hop IP Address must be on the same subnet as either the Ethernet or Satellite interfaces.

Menu Options/Fields	Entry	Description
		Optionally: If the user enters a multicast address (224.0.0.0-239.255.255.255) as the destination IP address, then the following parameters will be requested: Route MultiCast packets from Ethernet to Satellite? [y/n] The option allows the user to specify if multicast packets that match the provided IP address will be routed from the Ethernet to Satellite. “No” means that the packets will be discarded. Route MultiCast packets from Satellite to Ethernet? [y/n] The option allows the user to specify if multicast packets that match the provided IP address will be routed from the Satellite to Ethernet. “No” means that the packets will be discarded. Multicast Routes always have a subnet length of 32 and the next hop is 0.0.0.0 because it is not applicable. **Note:** The CiM does allow the specification of one and only one default route. Destination IP = 0.0.0.0 Subnet Length = 0 Next Hop IP = <some next hop address> This will cause all packets which do not match any other route to be sent to the Next Hop IP for further processing.
Base	**B**	The Route Table menu allows the user to view up to 8 different routes per screen. To allow editing on any of the 1024 entries that can be defined, the user can select a base address to control which 8 routes are displayed. For example, if the user wants to edit Routes 32-40, then a Base value of 32 should be defined.
Delete Route	**D**	Route Name to delete
Display All	**P**	Displays all of the routes that are currently defined in the system. This will include automatically generated routes which are provided to simplify provisioning of the system. The information displayed is: Route Name, DestIP/SnetBits, Next Hop, and Flags
QoS/DES	**Q**	Activates *QoS/DES* page.
Downlink Mcast	**Read Only**	Read only status of Downlink Multicast (Enabled or Disabled).
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.3.1 QoS (Quality of Service)/DES (Encryption) Page

The *QoS/DES* page is activated from the *Route Table Configuration* page. The *QoS Configuration/DES Key Selection* Page allows the user to define rules on how traffic over the Satellite Interface is processed by the CiM. All routes are presented to the user in the form of a table. Each record (which defines a unique route) in the table allows for the defining of the route properties.



Note: QOS and DES features can only be updated if the QOS and/or DES FAST features have been purchased from Comtech EF Data and the appropriate license key has been entered at the front panel.

The *QoS Configuration/DES Key Selection* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Route Name	#	This read-only field reflects the unique name assigned by the user to a route in the Route Table Configuration page.
Min Bandwidth	#	The Min bandwidth field establishes a guaranteed minimum data rate that a route will be allowed to support before the CiM starts to silently discard traffic. A value of 0 implies that a route is not guaranteed any bandwidth and it is acceptable to drop 100% of the

Menu Options/Fields	Entry	Description
		packets for a route because of a lack in carrier bandwidth. The Min Bandwidth is entered in multiples of 8 Kbps.
Max Bandwidth	#	The Max bandwidth field establishes a hard maximum traffic rate that can be processed by the CiM before it starts to silently discard traffic. A value of 0 for this field implies that no maximum limit is assigned to a route. This value is entered in multiples of 8 Kbps.
Priority	#	Priority allows the user to specify a specific route to be prioritized as either Priority 1 or Priority 2. Priority 1 was intended to be used when the route is servicing traffic that requires as much latency and jitter suppression as possible, for example RTP (voice) traffic. All other traffic should be given Priority 2, to ensure that mission critical traffic using Priority 1 will have no performance degradation. Default value for Prioity is 1. NOTES on QoS and QoS Prioritization: On input of Min B/W per route, please ensure SUM of Min B/Ws do not exceed total modem Transmit bandwidth. This is not automatically checked by CLI. When a Min B/W is specified for any Priority 1 or Priority 2 Route, All Priority 1 Max B/Ws are automatically calculated and filled in based on the following explanation: The CLI sums all routes' Min B/W (MINSUM) and then calculates Excess Bandwidth = Total Modem Tx Bandwidth - MINSUM The Excess Bandwidth is then equally distributed across the number of Priority 1 streams. That means the Max B/W per Priority 1 stream is automatically filled in as that specific route's MIN plus the divided up Excess Bandwidth. This is done for two reasons: If a Priority 1 route does not have a Max B/W limit, it will take all excess bandwidth, starving any Priority 2 from its guaranteed MIN B/W. This ensures Priority 2 MIN B/W settings are honored. To calculate for the administrator -- given all configured Min B/Ws, total bandwidth of modem, and equally distributed excess bandwidth across all Priority 1 routes -- what the Max B/W would be for each Priority 1 specific route. Please note that when no MINs are specified the MAXs are left at zero, meaning QoS is handled on a pure priority basis. Max/Min B/W settings are given in 1024 blocks. To calculate the actual B/W setting simply multiple the number shown by 1024. Alternatively note, that Tx

Menu Options/Fields	Entry	Description
		Modem Data Rate is given in true 1K blocks (56K is truly 56Kbps).
DES Key	#	The DES Key field allows the user to specify which DES Key should be selected for a route. This parameter will assume one of (3) values: 1. Clear 2. Key1 3. Key2 4. Random The value of CLEAR will force the CiM to not encrypt any traffic destined for the satellite. The value of Key1 will use the key specified in the Des Encrypt Configuration Page/Transmit Key 1 menu option to encrypt traffic destined for the satellite. The value of Key2 will use the key specified in the Des Encrypt Configuration Page/Transmit Key 2 menu option to encrypt all traffic processed by the CiM. The value of Random will cause the CiM to randomly use either Key1 or Key2 to encrypt all traffic destined for the satellite.
Base	**B**	The QoS/DES menu allows the user to view up to 8 different routes per screen. To allow editing on any of the 1024 entries that can be defined, the user can select a base address to control which 8 routes are displayed. For example, if the user wants to edit Routes 32-40, then a Base value of 32 should be defined.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

Note: If a user sets both the guaranteed and maximum bandwidths assigned to a route to 0, then packets will be randomly dropped for that route only when the resources of the carrier are being over-utilized.

11.2.3.1.1 Example Implementations using QoS and QoS Prioritization

The combination of MIN and MAX Bandwidth QoS combined with QoS Prioity allows for multiple levels of QoS implementation. We recommend that QoS is configured using one of the following formats:

PRIORITY with MAX BW – All routes are configured with the default value of 0 for MIN and can have a MAX BW defined to limit the amount of BW used by a route. Routes are designated as Priority 1 or 2.

Note: This is would be used when wanting to prevent the Priority 1 traffic from using all of the BW. Priority 2 traffic could also be limited to a maximum BW usage.

MIN/MAX BW Only – All routes are designated as Priority 1 default. Routes are configured with defined values of MIN BW. The MIN BW determines by the amount of BW that you want to dedicate to a route. The MAX is automaticaly calculated by the CiM based upon the formula listed in section 11.2.3.1 *NOTES* on QoS and QoS Prioritization: Step 2.

Note: This would be used for all traffic to be forwarded on a "first come, first served " basis, using strict BW quaruantees and limits.

MIN/MAX with Priority – Routes are designated as Priority 1 or 2. MIN BW's are defined for each route and MAX BW's are calculated by the CiM based upon the formula listed in *NOTES* on QoS and QoS Prioritization: Step 2.

Note: This is similar to PRIORITY with MAX BW with the additional capability of varying MIN BW's for routes. This should only be used when there are different MIN BW requirements for routes within the same Priority.

Here is a screen capture of the CiM CLI using the MIN/MAX with Priority format to configure QoS for various traffic routes. The CiM modem data rate is 2048 kbps for this example :

```
                    Configuring Qos/DES (per route basis)

            Route Name          Min B/W   Max B/W  Priority  DES Key

Route001....[Vidconf            512       512      1         Clear ].........1
Route002....[VoIP               384       384      1         Clear ].........2
Route003....[Internet           768       768      2         Clear ].........3
Route004....[FTP                512       1024     2         Clear ].........4
Route005....[SMTP               0         0        2         Clear ].........5
Route006....[UNKNOWN]...........................................................6
Route007....[UNKNOWN]...........................................................7
Route008....[UNKNOWN]...........................................................8
Base........[1].................................................................B
Global QoS..[Enabled]

Save Parameters to permanent storage.....................................S
```

```
Exit.....................................................................X
```

Route 1 (Vidconf) and Route 2 (VoIP) traffic require that the packets are forwarded with the least amount of latency, so they are designated as Priority 1. Route 1 has a Min B/W of 512 kbps to insure that amount of B/W will always be available for the video traffic. Route 2 is set up similarly with a Min B/W of 384 kbps for VoIP traffic.

Note: Setting a Min B/W for a route does not mean that that B/W is only available for that particular route 100% of the time. If less than the Min B/W is being used for a route, the CiM will allow other traffic to use the B/W; so maximum BW usage is always achieved. A Min B/W is set to make that amount of B/W available whenever needed for that route.

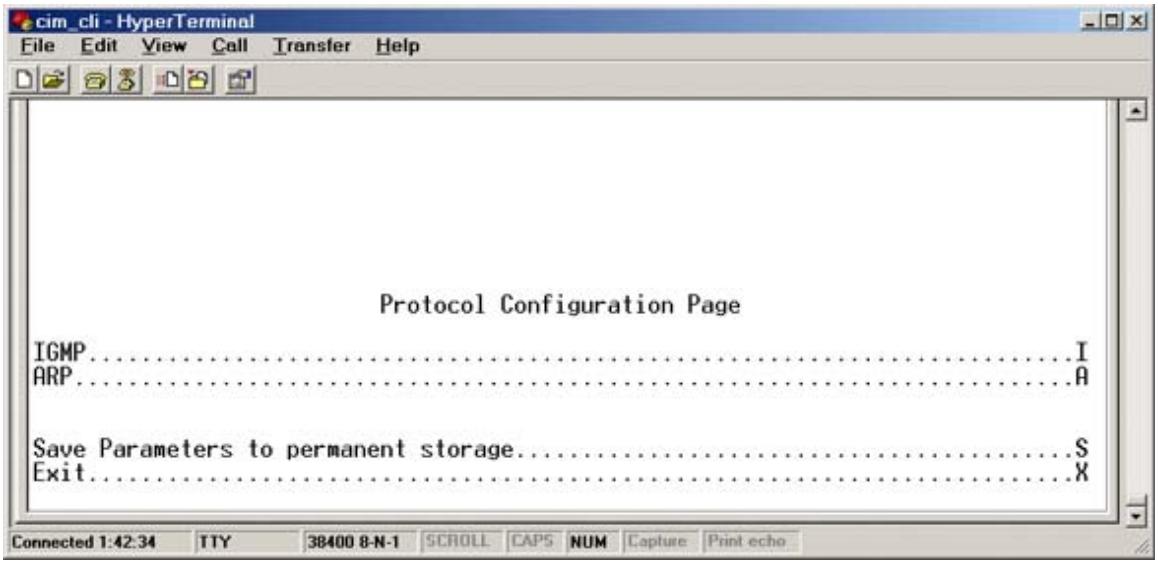
Route 3 (Internet) is designated as Priority 2 since it does not have the stricter latency requirements of video or VoIP. Although it is Priority 2, there is a Min and Max B/W of 768 kbps that will assure that at least (but never more than) 768 kbps will be made available for Internet access.

Route 4 (FTP) is set up similar to Route 3 and it will have at least 512 kbps but never more than 1024 kbps available for FTP.

Route 5 (SMTP) is Priority 2 with no Min or Max B/W settings because it is low priority, non-latency sensitive traffic. Since all of the 2048 kbps of the modem is assigned to the other routes Min B/W's, the SMTP will only have BW when at least one of the other routes is not utilizing all of it's Min B/W.

11.2.4 PROTOCOL CONFIGURATION PAGE

The *Protocol Configuration* page is activated from the *Main Menu* page.



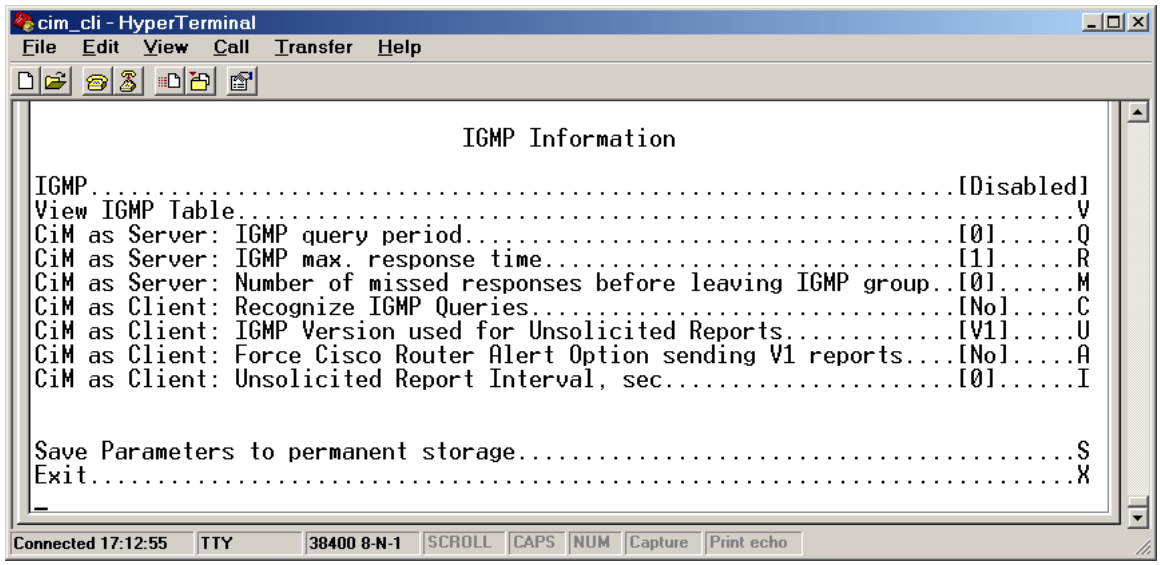
The *Protocol Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
IGMP	**I**	Activates *IGMP* page.
ARP	**A**	Activates *ARP Table Utilities* page.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.4.1 IGMP INFORMATION PAGE

The page *IGMP information* page is activated from the *Protocol Configuration* page.

The IGMP Information page allows a user to view the IGMP clients that are actively listening to content being provided by the CiM. It also allows the user to determine how the Ethernet Interface is configured either to receive requests to join IGMP groups or announce groups for others to join.



The *IGMP Information* page contains the following options/fields:

Menu Options/Fields	Entry	Description
IGMP	**Read Only**	Read only showing IGMP status (Enabled or Disabled).
View IGMP Table	**V**	This table reports the content that clients have subscribed to the CiM using the IGMP protocol. This allows an operator to determine which services are being used and the minimum time before a service will be terminated.
CiM as Server: IGMP query period	**Q**	The IGMP protocol requests that a server periodically publish to users on the LAN the Multicast IP Addresses that it can service. The IGMP query period defines the time interval (in seconds) between each of these queries for membership.
CiM as Server: IGMP max. response time	**R**	The IGMP max response time defines the time interval (in seconds) that the CiM should wait before it assumes that no parties are interested in the content published via an IGMP query. This option is expressed seconds, and the max response time that is accepted by the CiM is 25 seconds.

Menu Options/Fields	Entry	Description
CiM as Server: Number of missed responses before leaving IGMP group	**M**	Defines the number of membership queries that go unanswered from LAN clients before the Ehternet Interface will no longer forward data for that IGMP group. Consider a CiM that has the IGMP query period set to 60 seconds and the number of missed responses set to 3. If a client joins an IGMP group, then the service to that group will not be discontinued until no clients respond to a query from the CiM for a period of 60*3 = 180 seconds.
CiM as Client: Recognized IGMP queries	**C**	The Recognize IGMP Queries parameters determines if the CiM should respond to periodic queries from an IGMP server that publishes a request to join a specified multicast group. This parameter can assume one of (2) values: 1. Yes 2. No If set to YES, the CiM will respond to an IGMP query by requesting to join a Multicast Group published by the server that is defined in the CiM's route table. If set to NO, the CiM will not respond to IGMP queries from a server. In this type of configuration, the CiM may be configured to unconditionally request to join an IGMP group at an interval specified by the "Unsolicited Report Interval" option in the Transmitter IGMP Client Configuration Page.
CiM as Client: IGMP Version used for Unsolicited Reports	**U**	This parameter defines which version of the IGMP protocol should be followed when attempting to join a group on a Multicast Server via an unsolicited report. When the CiM is configured to Recognize IGMP Queries, the CiM will respond to a query in the same version that the server used to initiate the query. This parameter will assume one of (2) values: 1. V1 2. V2 The value of V1 will configure the CiM to use the IGMP Version 1 protocol to join a Multicast Group available on an IGMP Server in response to an IGMP Query. The value of V2 will configure the CiM to use the IGMP Version 2 protocol to join a Multicast Group available on an IGMP Server in response to an IGMP Query. The user can toggle the value of the IGMP Version used for Unsolicited Reports from 'V1' and 'V2' with each selection.

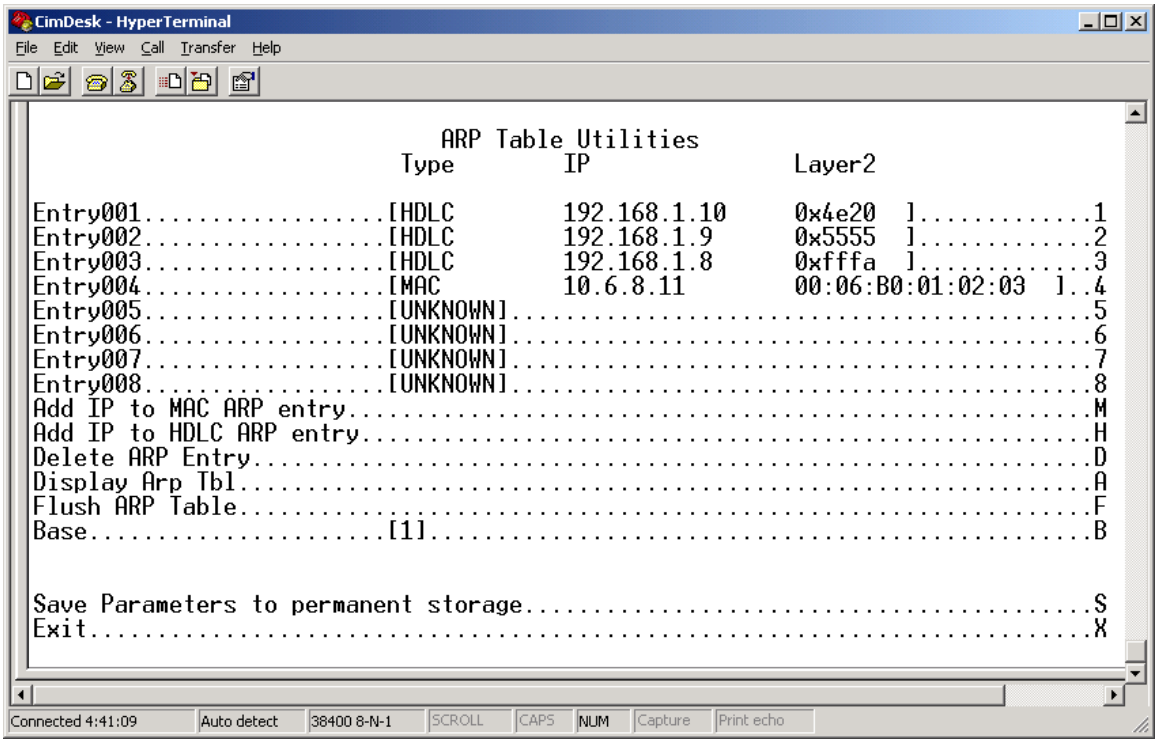
Menu Options/Fields	Entry	Description
CiM as Client: Force Cisco Router Alert Option sending V1 reports	**A**	Some Cisco Routers may require the definition of a Router Alert Option to recognize a report from a Client to join a Multicast group. The IP Router Alert Option is defined in RFC2113 and was introduced by Cisco. While this option is not part of the IGMP standard, most IGMP V2 implementations contain this option. However, most implementations of IGMP V1 do not contain this option. This parameter is defined to prevent possible conflicts in networks in which a Cisco Router is configured as an IGMP V1 server. This parameter can assume one of the following (2) values: 1. YES 2. NO If set to YES, the CiM will generate IGMP reports to join Multicast groups as specifically required by some Cisco Router configurations. If set to NO, the CiM will generate IGMP reports to join Multicast groups as defined an implemented by most IGMP servers.
CiM as Client: Unsolicited Report Interval, sec	**I**	The Unsolicited Report Interval configures the CiM to generate unsolicited reports to join a Multicast Group at specified time intervals. Each unsolicited report to join a Multicast group will use the version of the IGMP protocol as specified by the IGMP Version used for Unsolicited Reports option. The value of the Unsolicited Report Interval specifies the number of seconds between unsolicited reports. A value of zero implies that no unsolicited reports to join a Multicast group should be generated by the CiM.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.4.2 ARP TABLE UTILITIES PAGE

The *ARP Table Utilities* page is activated from the *Protocol* page.

The *ARP Table Utilities* page allows the user to view and edit the ARP table defined by the CiM. It allows up to 1024 static ARP entries. The Static ARP entries provided by the CiM fall into two categories: IP->MAC and IP->HDLC.

Note For the CiM to properly route packets over the Satellite Interface, all of the Next Hop Addresses in the route table **MUST** have an IP to HDLC mapping in the ARP table. If the destination IP address of an incoming packets matches a route in the route table that does not have an IP to HDLC mapping, it will be silently discarded.



The *ARP Table Utilities* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Entry001 - 008	**1 - 8**	The user can define up to 1024 static ARP definitions on the CiM. This table allows the user to operate/view up to 8 of these definitions. An ARP definition is defined as: 1. A Unicast IP Address This IP Address is used as a lookup into the ARP table when the CiM needs to resolve a MAC or HDLC Address **Restrictions**: IP Address must be on the same subnet as the Ethernet or Satellite Interfaces. IP Address must not map to multiple HDLC or MAC addresses.

Menu Options/Fields	Entry	Description
		IP Address must be a valid Unicast address (Not Multicast, broadcast, etc.) 2. A MAC Address The MAC Address defines the hardware destination MAC Address that is used when an Ethernet packet destined for an IP machine from the CiM. **OR** A HLDC Address The HDLC Address defines the hardware destination HDLC Address that is used when a packet destined for a CiM modem over the Satellite Interface.
Add IP to MAC ARP entry	**M**	Adds a IP to MAC ARP entry.
Add IP to HDLC ARP entry	**H**	Adds a IP to HDLC ARP entry.
Delete ARP Entry	**D**	Allows the user to delete a Static ARP entry. Queries the user for the IP address of the ARP entry to delete.
Display ARP Tbl	**A**	Displays the entire IP to MAC ARP table. Includes the Static as well as dynamic ARP entries.
Flush ARP Table	**F**	This option allows the entire ARP table to be removed. This is equivalent to performing the standard UNIX command “arp –d” on each address reported in an “arp –a” command. The command only flushes the dynamic ARP entries. The static ARP entries will not be removed.
Base	**B**	The ARP Table menu allows the user to view up to 8 different ARP definitions per screen. To allow editing on any of the 256 entries that can be defined, the user can select a base address to control which 8 routes are displayed. For example, if the user wants to edit static ARP Entries 32-40, then a Base value of 32 should be defined.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5 MODEM PARAMETERS PAGE

The *Modem Parameters* page is activated by selecting *Satellite Modem Configuration* from the *Main Menu* page.

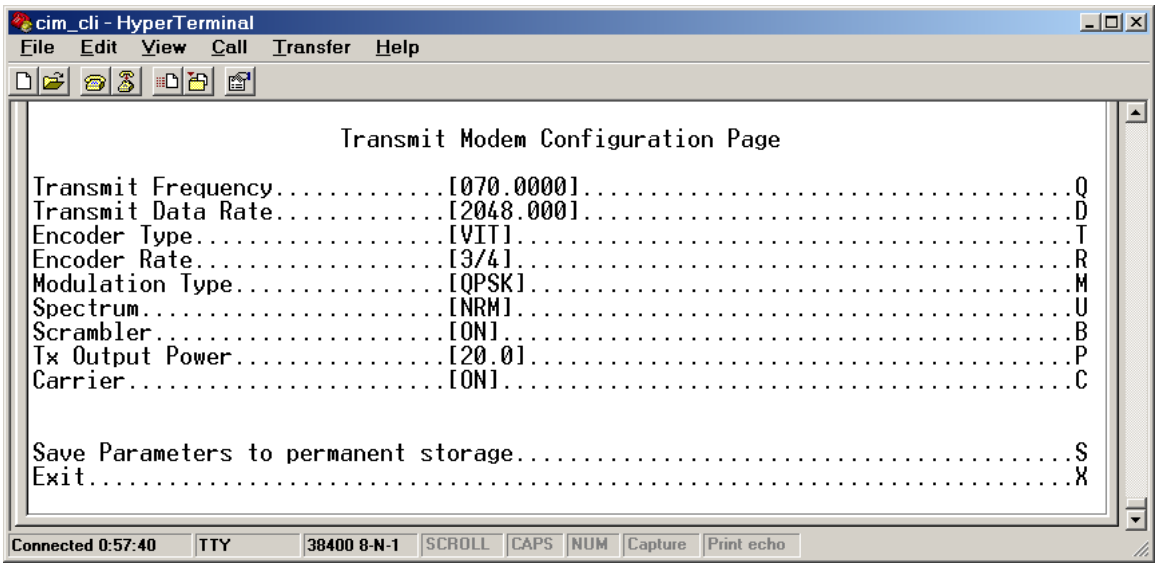
Note: Refer to CDM-550 user manual for detailed explanation of all parameters and settings listed in this menu and sub-menus. This section provides the valid selections available for each menu item.

The *Modem Parameters* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Modem Type	**Read Only**	Modem type.
Transmit Modem Configuration	**T**	Activates *Transmit Modem Configuration* page.
Receive Modem Configuration	**R**	Activates *Receive Modem Configuration* page.
AUPC	**P**	Activates *AUPC* page.
Miscellaneous	**M**	Activates *Miscellaneous Settings* page.
Alarm Masks	**A**	Activates *Alarm Masks Modem Configuration* page.
Utilities	**U**	Activates *Utilities* page.
Events and Statistics	**E**	Activates *Modem Events and Statistics* page.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.1 TRANSMIT MODEM CONFIGURATION PAGE

The *Transmit Modem Configuration* page is activated from the *Modem Parameters* page.



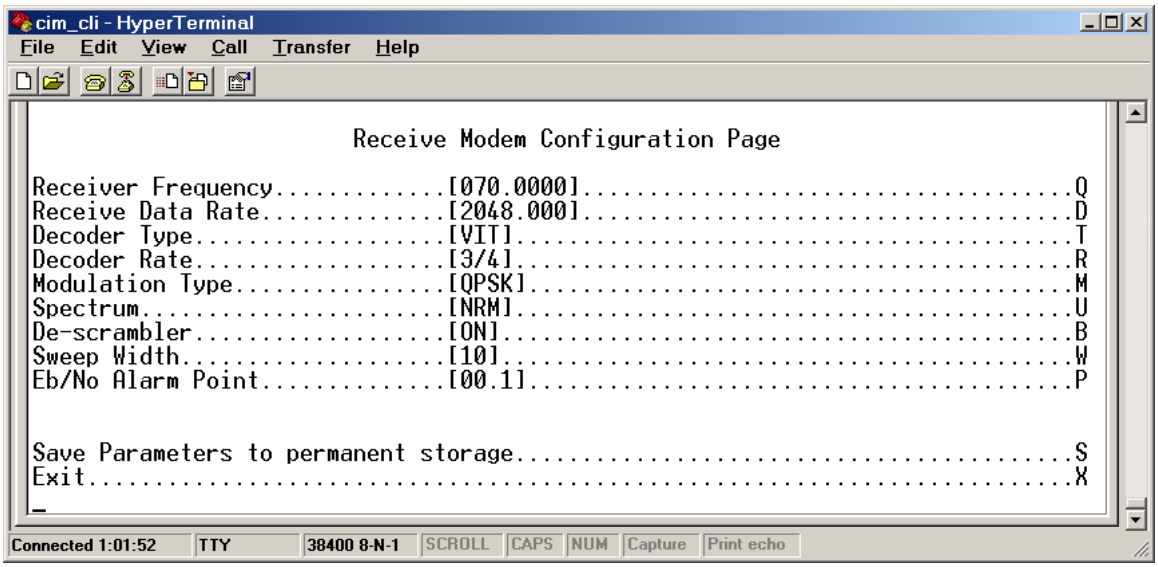
The *Transmit Modem Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Transmit Frequency	**Q**	Valid ranges are from 52.0000 to 88.0000 MHz
Transmit Data Rate	**D**	The rate at which the Modem will send traffic over the Satellite Interface. Valid ranges are from 2.4000 to 2048.0000
Encoder Type	**T**	1 - NONE 2 - VIT 3 - TURBO_3/4_Q 4 - TURBO_B21/44 5 - TURBO_B5/16 6 - TURBO_3/4_OQ
Encoder Rate	**R**	1 - 1/2 2 - 3/4 3 - 7/8 4 - 21/44 5 - 5/16
Modulation Type	**M**	1 - BPSK 2 - QPSK 3 - OQPSK
Spectrum	**U**	1 - NRM 2 - INV
Scrambler	**B**	1 - OFF 2 - ON
Tx Output Power (minus sign assumed)	**P**	Valid ranges are from 0.0 to 20.0 dBm

Menu Options/Fields	Entry	Description
Carrier	**C**	1 - OFF 2 - ON 3 - RTI
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.2 Receive Modem Configuration Page

The *Receive Modem Configuration* page is activated from the *Modem Parameters* page.



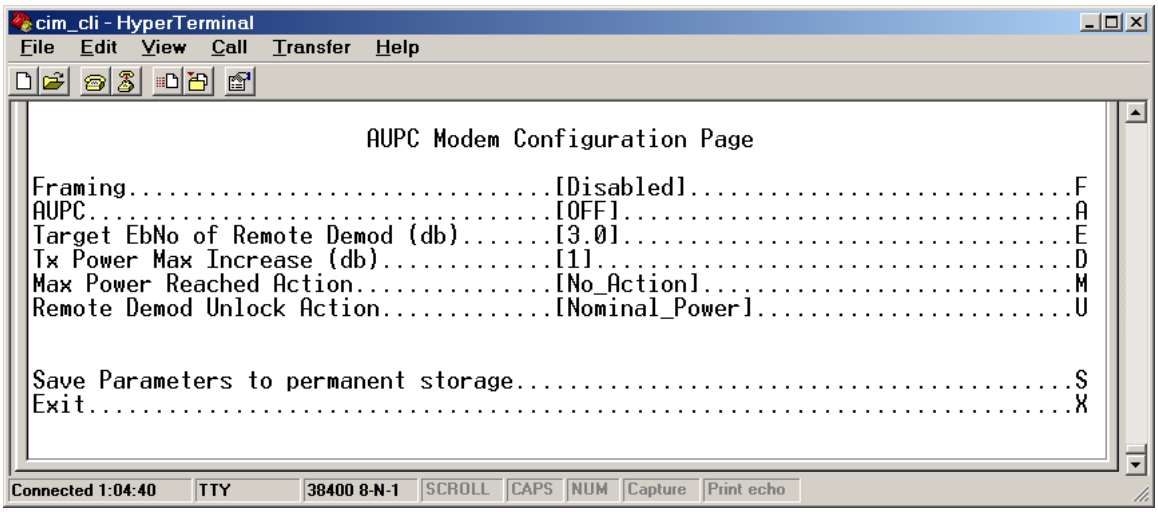
The *Receive Modem Configuration* Page contains the following options/fields:

Menu Options/Fields	Entry	Description
Receiver Frequency	**Q**	Valid ranges are from 52.0000 to 88.0000 MHz.
Receive Data Rate	**D**	Valid ranges are from 2.4000 to 2048.0000 kbps.
Decoder Type	**T**	1 - NONE 2 - VIT 3 - TURBO_3/4_Q 4 - TURBO_B21/44 5 - TURBO_B5/16 6 - TURBO_3/4_OQ
Decoder Rate	**R**	1 - 1/2 2 - 3/4 3 - 7/8 4 - 21/44 5 - 5/16
Modulation Type	**M**	1 - BPSK 2 - QPSK 3 - OQPSK
Spectrum	**U**	1 - NRM 2 - INV
De-scrambler	**B**	1 - OFF 2 - ON
Sweep Width	**W**	Valid ranges are from 1 to 30 kHz.
Eb/No Alarm Point	**P**	Valid ranges are from 0.1 to 16.0
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This

Menu Options/Fields	Entry	Description
		configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.3 AUPC MODEM CONFIGURATION PAGE

The *AUPC Modem Configuration* page is activated from the *Modem Parameters* page.

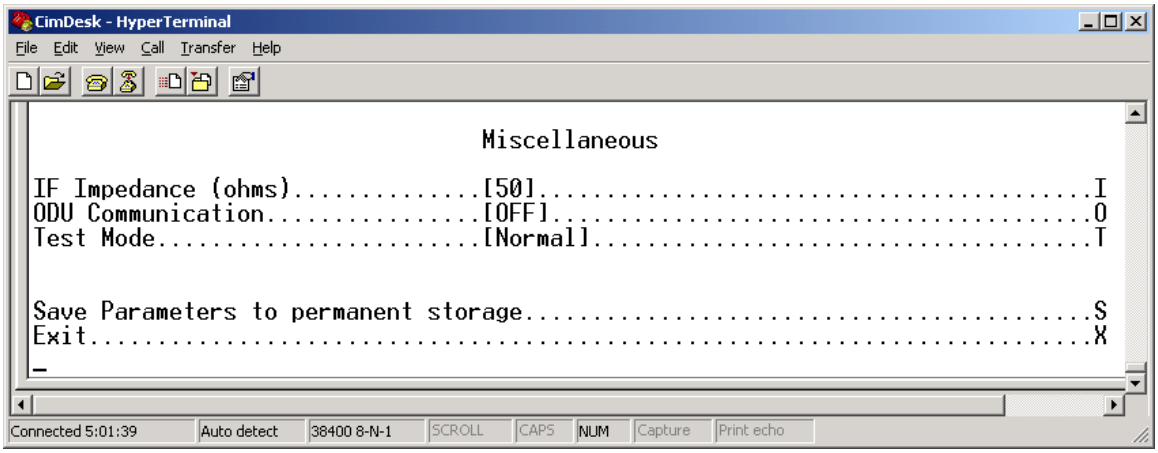


The *AUPC Modem Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Framing	**F**	1 - Disabled 2 - Enabled
AUPC	**A**	1 - OFF 2 - ON
Target EbNo of Remote Demod(db)	**E**	Valid ranges are from 0.1 to16.0 dB
Tx Max Increase (dB)	**D**	Valid ranges are from 0 to 9 dB.
Max Power Reached Action	**M**	1 - No_Action 2 - Generate_TX_Alarm
Remote Demod Unlock Action	**U**	1 - Nominal_Power 2 - Maximum_Power
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.4 Modem Miscellaneous Configuration Page

The *Modem Miscellaneous Configuration* page is activated from the *Modem Parameters* page.

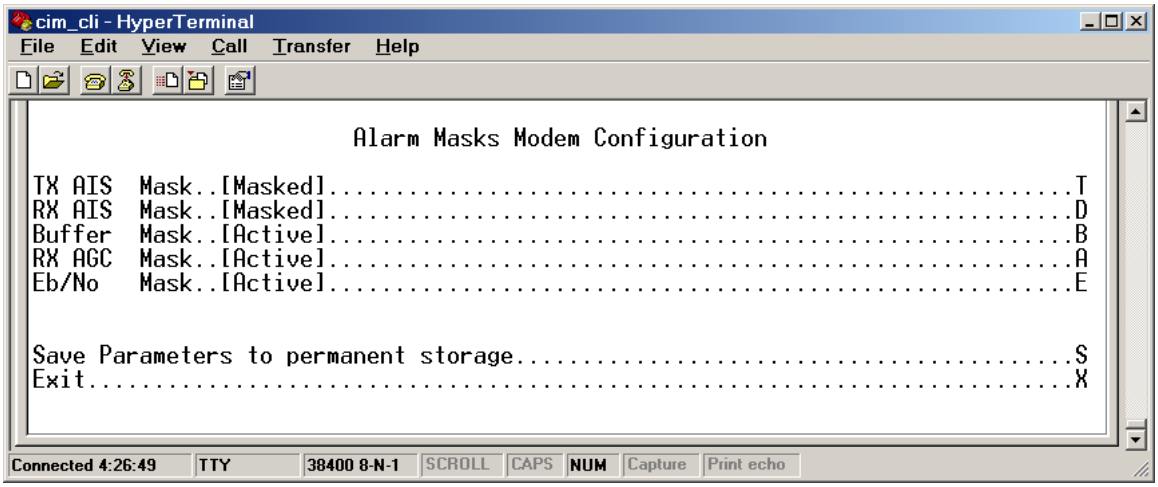


The *Modem Miscellaneous Configuration* Page contains the following options/fields:

Menu Options/Fields	Entry	Description
IF Impedance (Ohms)	**I**	1 - 50 (Ohms) 2 - 75 (Ohms)
ODU Communication	**O**	1 - OFF 2 - ON
Test Mode	**T**	1 - Normal 2 - IF_loopback 3 - Digital_loopback 4 - I/O_Loopback 5 - Tx_CW 6 - TX_alt_101010 7 - RF Loopback
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.5 Alarm Masks Modem Configuration Page

The *Alarm Masks Modem Configuration* page is activated from the *Modem Parameters* page.

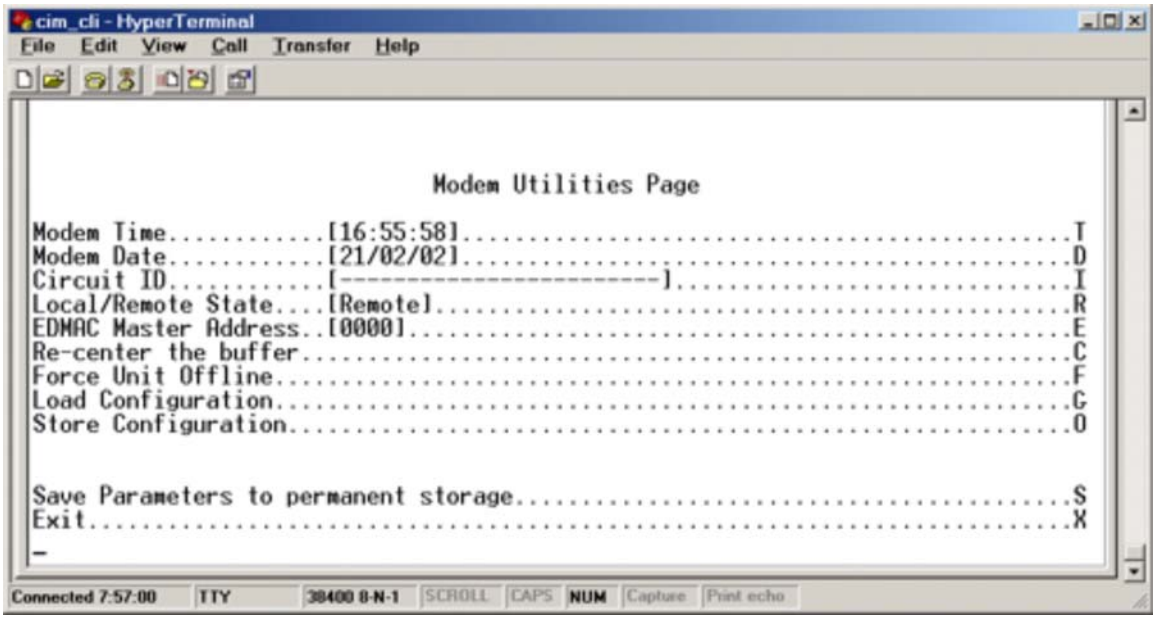


The *Alarm Masks Modem Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Tx AIS Mask	**T**	1 - Active 2 - Masked
Rx AIS Mask	**D**	1 - Active 2 - Masked
Buffer Mask	**B**	1 - Active 2 - Masked
Rx AGC Mask	**A**	1 - Active 2 - Masked
Eb/No Mask	**E**	1 - Active 2 - Masked
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.6 MODEM UTILITIES PAGE

The *Modem Utilities* page is activated from the *Modem Parameters* page.

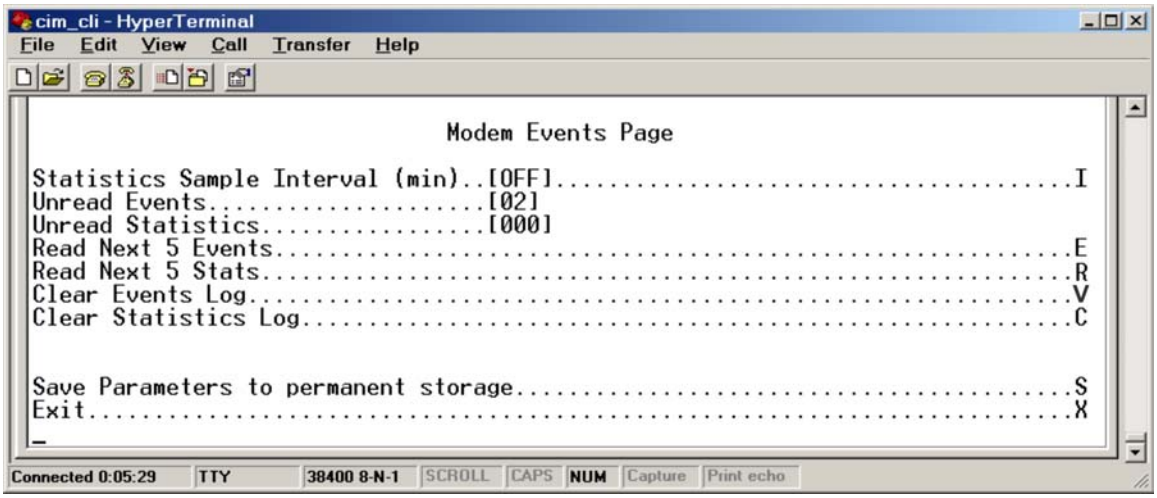


The *Modem Utilities* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Modem Time	**T**	Enter the Time HH:MM:SS
Modem Date	**D**	Enter the Date as: DD/MM/YY
Circuit ID	**I**	Enter the Enter ID (Must be exactly 24 characters)
Local/Remote State	**R**	1 -- Local 2 -- Remote
EDMAC Master Address	**E**	Valid ranges are from 0 to 9900 in multiples of 10.
Re-center the Buffer	**C**	Forced immediately, no additional message.
Force Unit Offline	**F**	Forced immediately, no additional message.
Load Configuration	**G**	Enter the Configuration (0 = None) Valid ranges are from 0 to 9
Store Configuration	**O**	Enter the Configuration (0 = None) Valid ranges are from 0 to 9
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.5.7 MODEM EVENTS PAGE

The *Modem Events* page is activated from the *Modem Parameters* page.



The *Modem Events* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Statistics Sample Interval (min)	**I**	1 - 10 2 - 20 3 - 30 4 - 40 5 - 50 6 - 60 7 - 70 8 - 80 9 - 90 10 - OFF
Unread Events	**Read Only**	Number of Unread Events is listed
Unread Statistics	**Read Only**	Number of Unread Statistics is listed
Read Next 5 Events	**E**	Immediately displays next 5 Events and decrements Unread Events Counter.
Read Next 5 stats	**R**	Immediately displays next 5 Statistics and decrements Unread Statistics Counter.
Clear Events Log	**V**	
Clear Statistics Log	**C**	
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.6 REDUNDANCY CONFIGURATION PAGE

The *Redundancy Configuration* page is activated from the *Main Menu* page.

Note: This page is not accessible unless the modem is properly connected to a Comtech EF Data qualified Redundancy Switch.

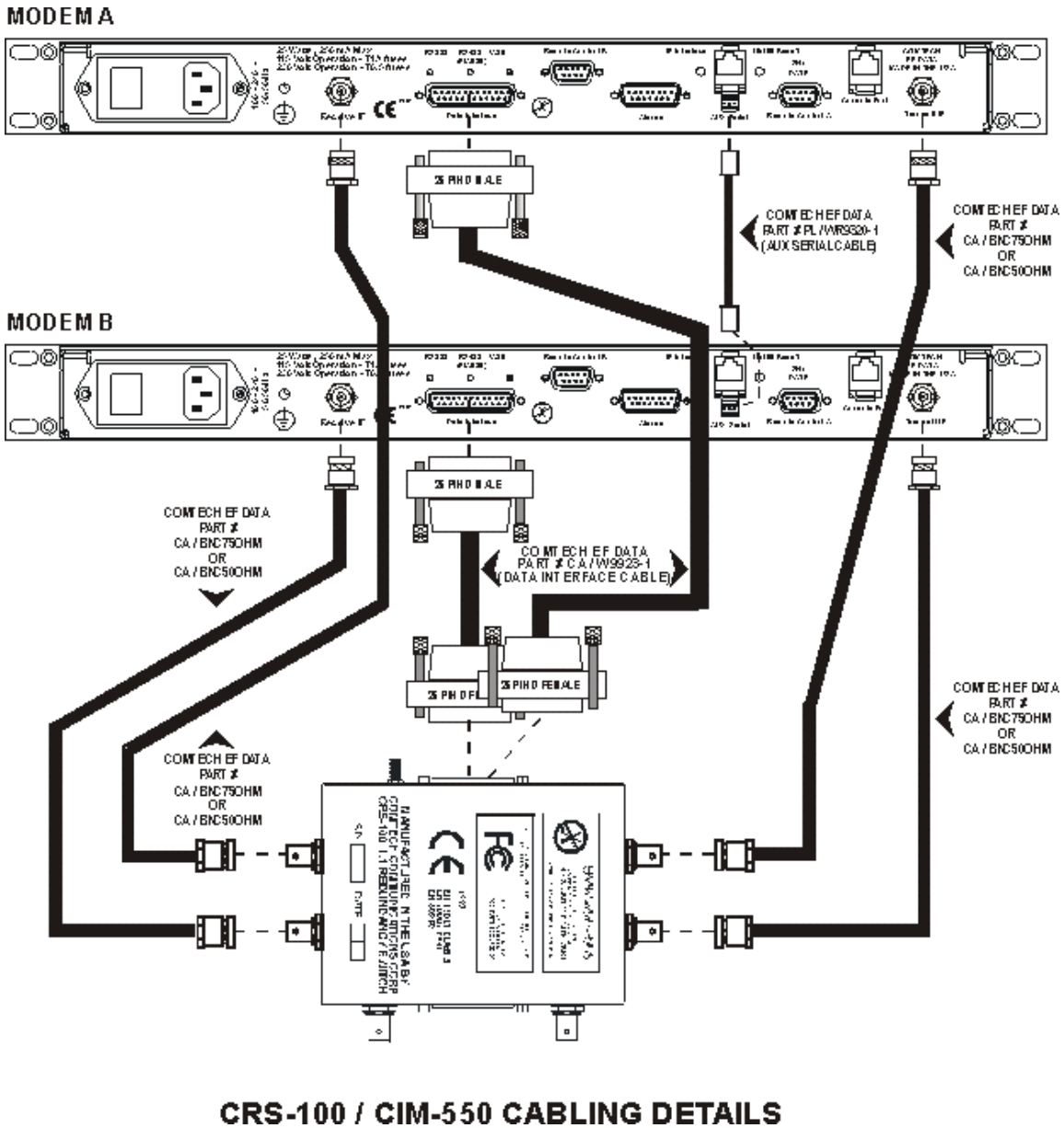
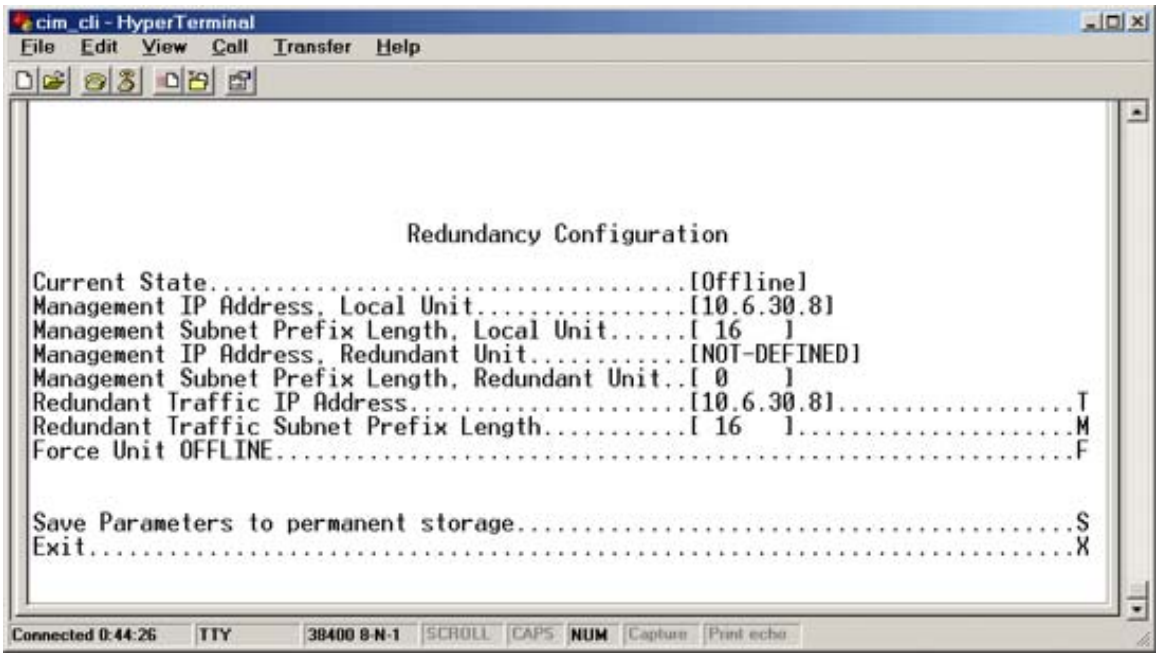


Figure 11-1. CRS-100/CiM-550 Cabling Details



Redundancy implies the coordination of two CiM's to provide a redundant link. Each of the CiM's will be defined as either an Online or Offline. The Online is the unit that will process user traffic. The Offline modem monitors the health of the Online Modem. If the Offline detects a failure on the Online, it will assume the role of the Online. To allow a user to verify connectivity with the Offline, the Offline is assigned a unique IP Address. To support this need, a secondary unit will perform the following actions after the detection of a failure on the Controller :

1. Assume the Traffic IP Address.
2. Assume the Traffic MAC Address.
3. Assume the role of Online (i.e. The state changes from Offline to Online).

To enable redundancy, a user must :

1. Define a unique IP Address for each Modem via the Controller's *Interface Configuration* Page.
2. Define a unique Traffic IP Address on the Online modem (will be the same for each modem) via the Online's *Redundancy Configuration* Page.

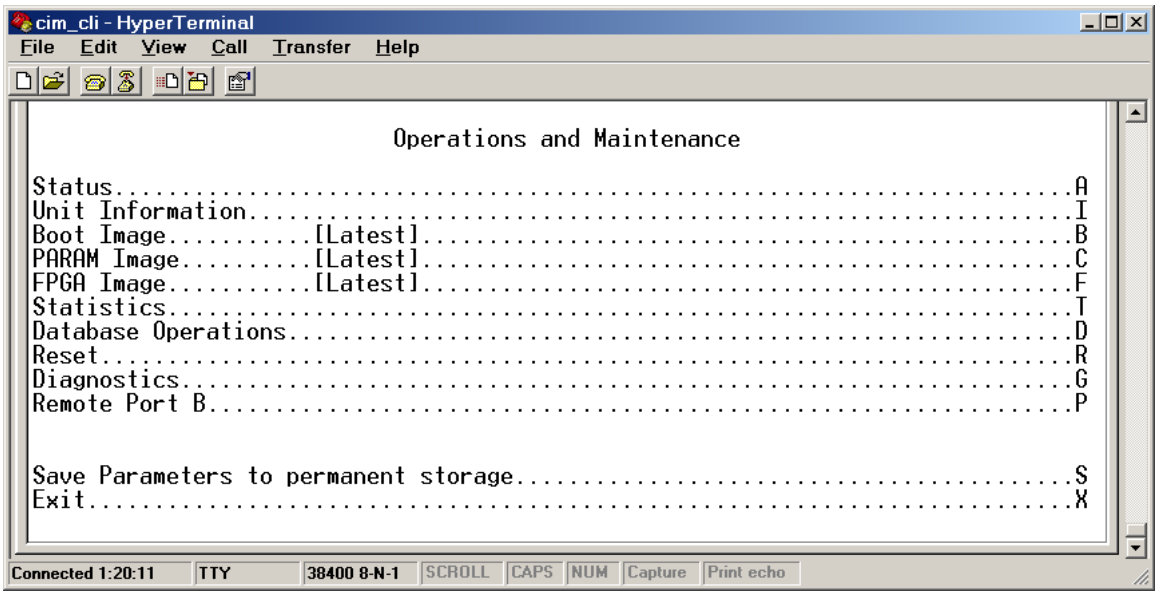
If Redundancy is enabled on both the Online and Offline, their respective roles will be displayed on the 'Current State' field on the Redundancy Configuration menu.

The *Redundancy Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Current State	**Read Only**	Defines the online/offline status of the CiM.
Management IP Address, Local Unit	**Read Only**	IP Address for the Ethernet Interface for the Local Unit. The value is set through the *Ethernet Interface(fei0)* page. The Management IP Address must be on the same subnet as the other management IP and traffic IP.
Management Subnet Prefix Length, Local Unit	**Read Only**	Subnet Prefix for the Ethernet Interface for the Local Unit. The value is set through the *Ethernet Interface(fei0)* page. The Management Subnet Prefix Length must be the same as the other management prefix length and traffic prefix length. Enter the subnet mask prefix length (range is 8..30).
Management IP address, Redundant Unit	**Read Only**	IP Address for the Ethernet Interface for the Remote Unit. The value is set through the *Ethernet Interface(fei0)* page on the other modem in the redundant pair. The Management IP Address must be on the same subnet as the other management IP and traffic IP.
Management Subnet Prefix Length, Redundant Unit	**Read Only**	Subnet Prefix for the Ethernet Interface for the Local Unit. The value is set through the *Ethernet Interface(fei0)* page on the other modem in the redundant pair. The Management Subnet Prefix Length must be the same as the other management prefix length and traffic prefix length. Enter the subnet mask prefix length (range is 8..30).
Redundant Traffic IP Address	**T**	The Traffic IP will float between the two redundant modems and will always be active on the Online Modem. The Redundant IP Traffic Address must be on the same subnet as the other traffic IP. Enter the ip address in aaa.bbb.ccc.ddd format
Redundant Traffic Subnet Prefix Length	**M**	The Traffic IP will float between the two redundant modems and will always be active on the Online Modem. The Redundant Subnet Prefix Length must be the same as the other traffic prefix length. Enter the subnet mask prefix length (range is 8..30).
Force Unit Offline	**F**	If the modem is currently Online, this command will force a switchover so that the redundant pair becomes the Online modem and processes the incoming traffic. This modem will transition from Online to Offline. Is the modem is already Offline, then this command will be ignored.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7 OPERATIONS AND MAINTENANCE PAGE

The *Operations and Maintenance* page is activated from the *Main Menu* page.



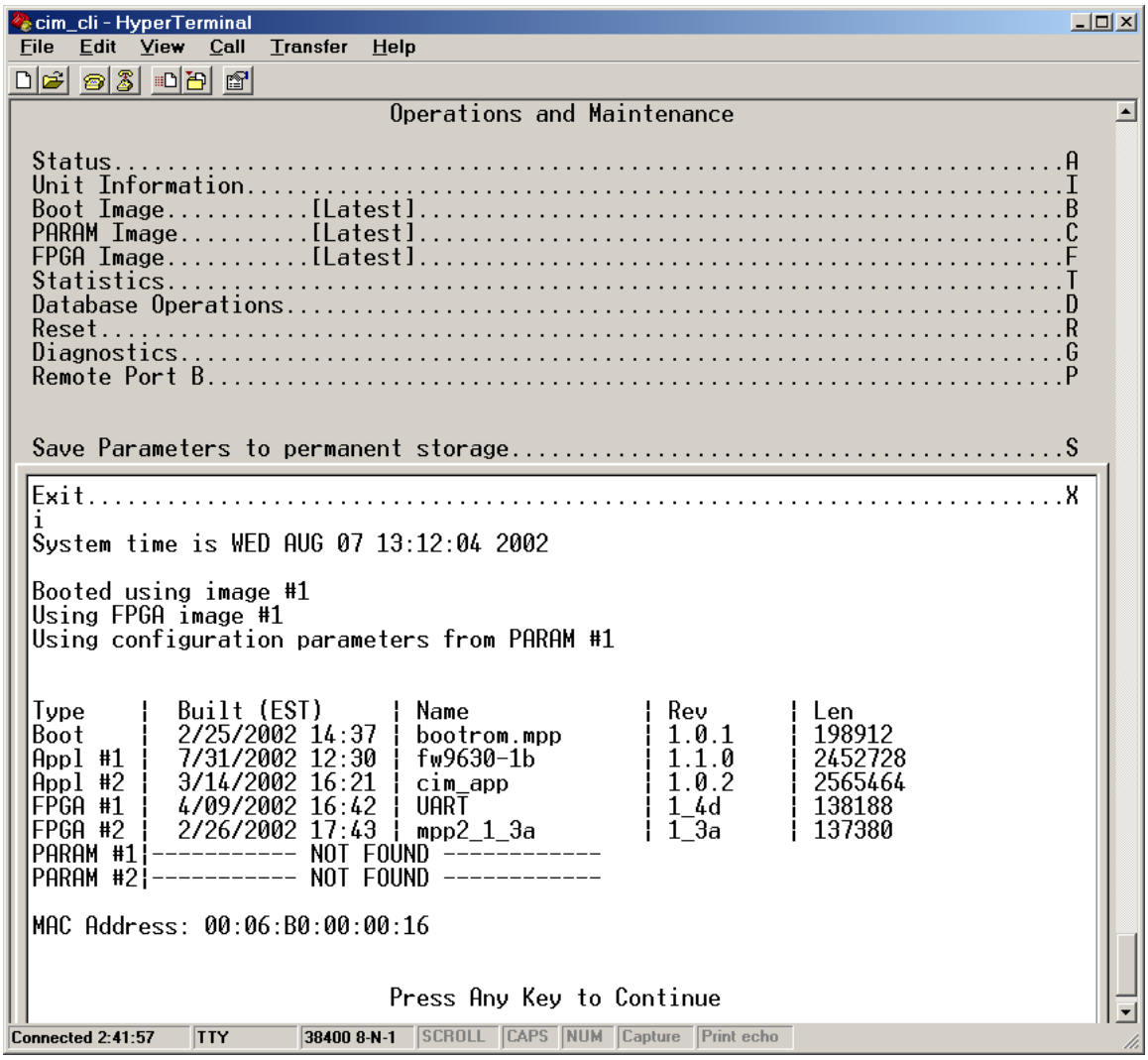
The *Operations and Maintenance* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Status	**A**	Displays status information
Unit Information	**I**	Displays unit information
Boot Image	**B**	Determines which version of the CiM firmware will be loaded upon boot-up. The possible options are: 0. Latest - boot the newest file based upon date. 1. Image1 - boot the firmware loaded into the first slot in permanent storage 2. Image2 - boot the firmware loaded into the second slot in permanent storage
PARAM Image	**C**	Change name to PARAM file. This is the only one currently supported. Determines which PARAM file will be loaded on bootup. The options are: 0. Latest - uses the newest file based on date 1. Image1 - uses the file loaded into the first slot of permanent storage. 2. Image2 - uses the second file loaded into the second slot of permanent storage. 3. Factory - uses the internal, hard-coded factory default parameters.
FPGA Image	**F**	Determines which version of the CiM FPGA firmware will be loaded upon boot-up. The possible options are: 0. Latest - boot the newest file based upon date 1. Image1 - boot the firmware loaded into the first slot

Menu Options/Fields	Entry	Description
		in permanent storage 2. Image2 - boot the firmware loaded into the second slot in permanent storage
Statistics	**T**	Activates *Statistics Menu* page.
Database Operations	**D**	Activates *Administrative Database Operations* page.
Reset	**R**	Allows user to reboot the modem. It has the same logical effect of power-cycling the unit.
Diagnostics	**G**	Activates *Diagnostics* page.
Remote Port B	**P**	Activates *Remote Port B Configuration* page.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

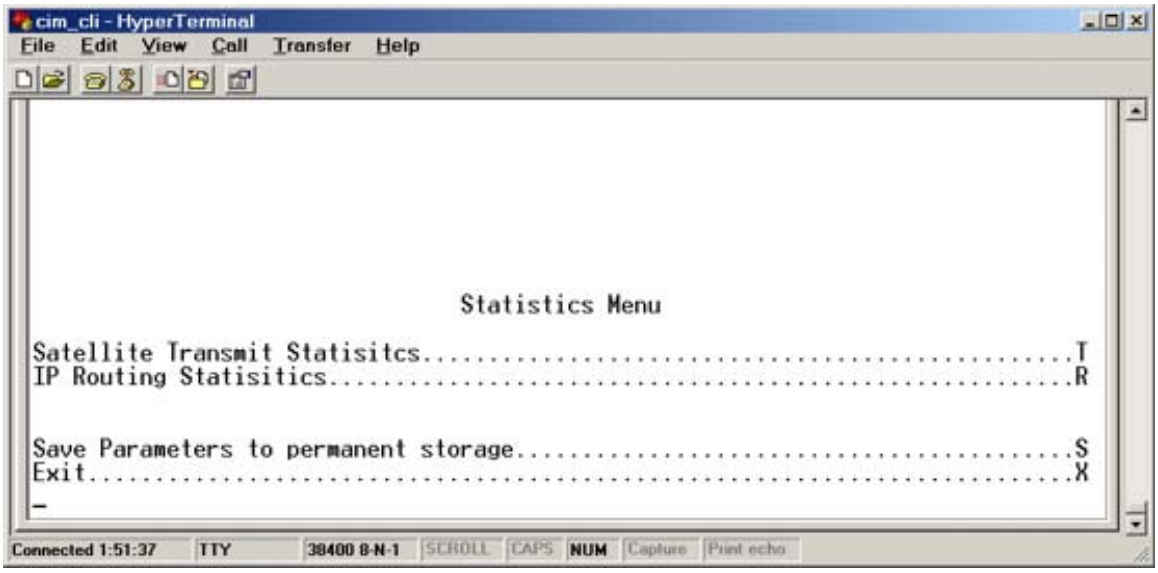
11.2.7.1 UNIT INFORMATION

The *Unit Information* page is activated from the *Operations and Maintenance* page.



11.2.7.2 STATISTICS PAGE

The *Statistics Menu* page is activated from the *Operations and Maintenance* page.

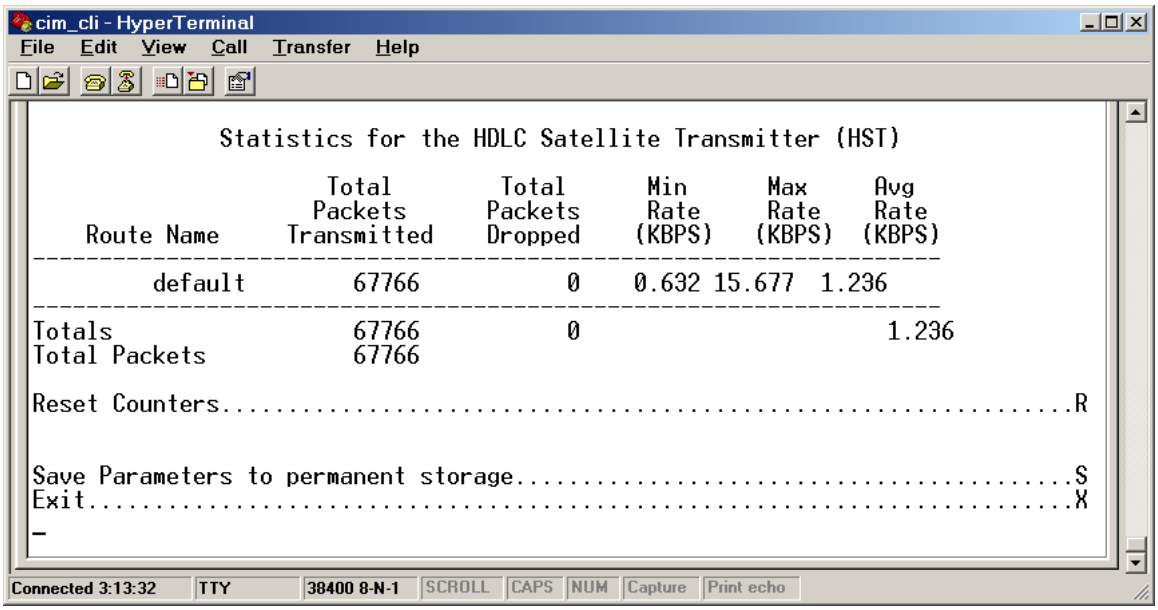


The *Statistics Menu* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Satellite Transmit Statistics	**T**	Displays Statistics for the Satellite Transmitter and allows counters to be reset.
IP Routing Statistics	**R**	Displays Statistics for IP Routing and allows counters to be reset.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7.2.1 Satellite Transmit Statistics Page

The *Satellite Transmit Statistics* page is activated from the *Statistics Menu* page. The *Satellite Transmit Statistics* page displays counts of the number of packets transmitted on each configured Satellite destined route on the CiM. In orders words, all of the routes which have a next hop IP address which is another CiM modem on the other side of the Satellite link.

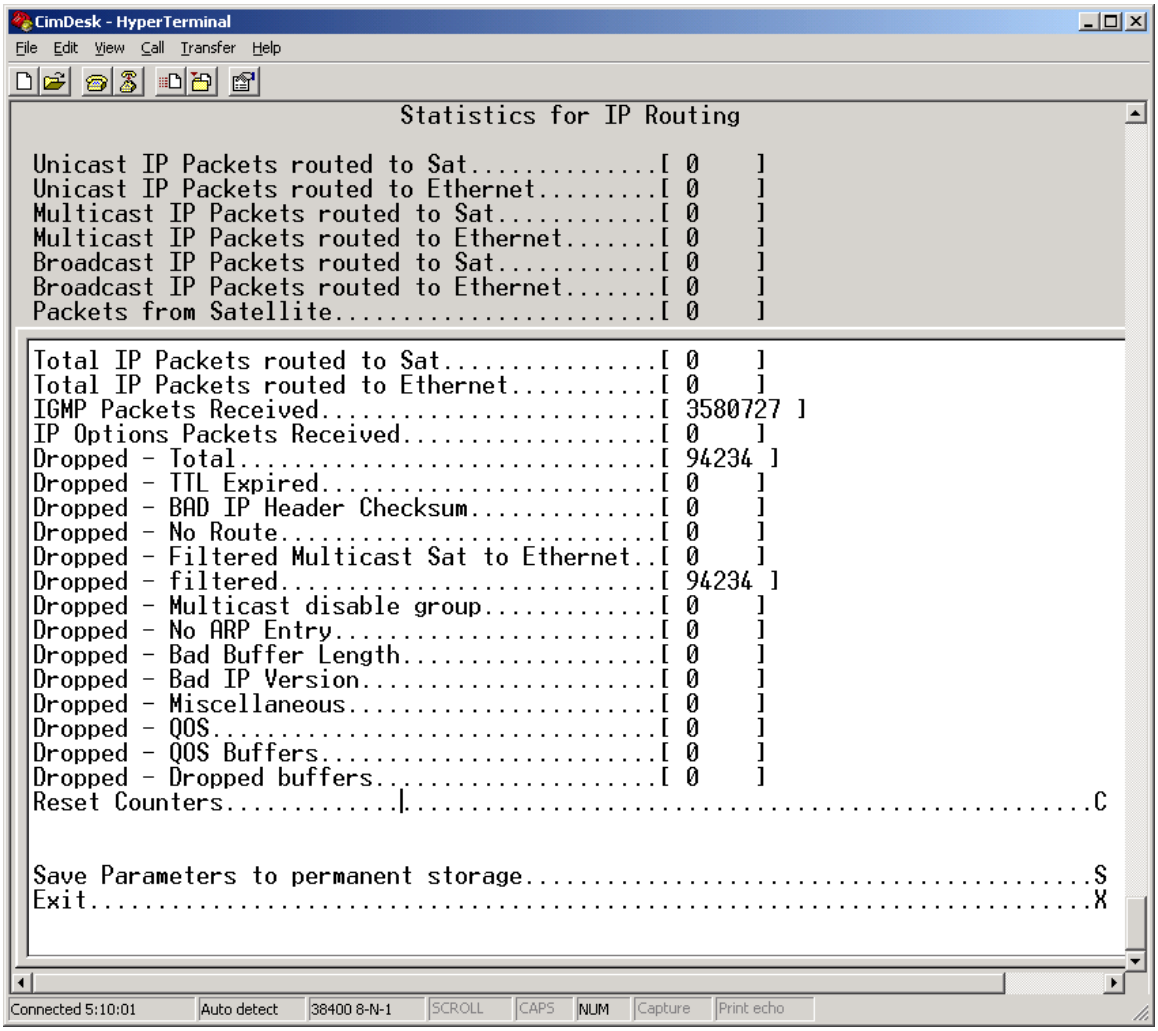


The *Satellite Transmit Statistics* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Route Table Stats	**Read Only**	The Route Table Stats presents the total packets transmitted and dropped for each Satellite destined route in the CiM in a table format. This table also shows the minimum, maximum, and average data rates sustained on each route.
Reset Counters	**R**	Executing this menu option resets all statistics gathered for the transmitter to zero
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7.2.2 IP Routing Statistics Page

The *IP Routing Statistics* page is activated from the *Statistics Menu* page The *IP Routing Statistics* page displays the statistics for the number of IP packets routed by the CiM.



The *IP Routing Statistics* page contains the following options/fields :

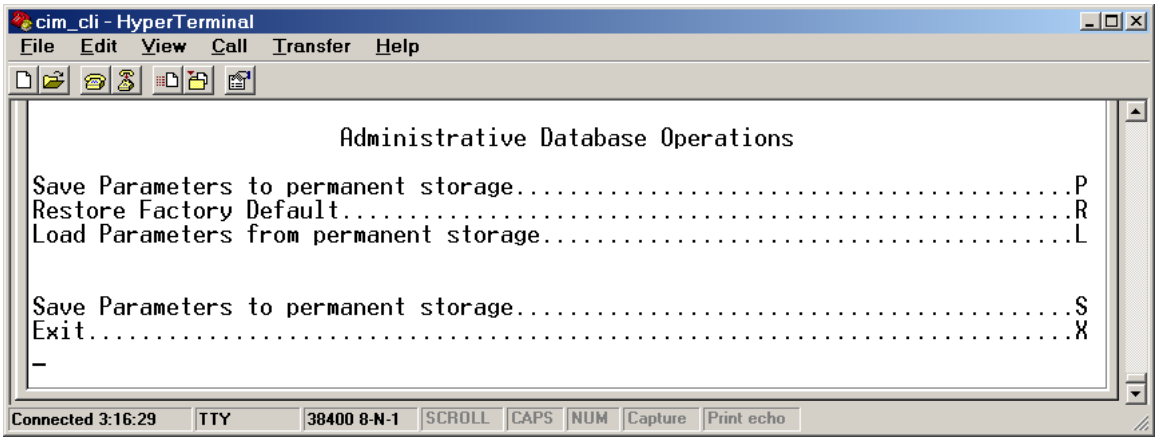
Menu Options/Fields	Entry	Description
Unicast IP Packets routed to Sat	**Read Only**	The Unicast Packets routed to Sat counter indicates the number of Unicast packets that were routed to the Satellite Interface. Could be Ethernet to Sat. or Sat. to Sat.
Unicast IP Packets routed to Ethernet	**Read Only**	Unicast Packets routed to Ethernet counter indicates the number Unicast packets that were routed to the Ethernet Interface. Could be Sat. to Ethernet or Ethernet to Ethernet.

Menu Options/Fields	Entry	Description
Multicast IP Packets routed to Sat	**Read Only**	The Multicast Packets routed to Sat counter indicates the number of Multicast packets that were routed to the Satellite Interface. Could be Ethernet to Sat. or Sat. to Sat.
Multicast IP Packets routed to Ethernet	**Read Only**	Multicast Packets routed to Ethernet counter indicates the number Multicast packets that were routed to the Ethernet Interface. Could be Sat. to Ethernet or Ethernet to Ethernet.
Broadcast IP Packets routed to Sat	**Read Only**	The Broadcast Packets routed to Sat counter indicates the number of Broadcast packets that were routed to the Satellite Interface. Could be Ethernet to Sat. or Sat. to Sat.
Broadcast IP Packets routed to Ethernet	**Read Only**	Broadcast Packets routed to Ethernet counter indicates the number Broadcast packets that were routed to the Ethernet Interface. Could be Sat. to Ethernet or Ethernet to Ethernet
Packets from Satellite	**Read Only**	Packets from Satellite is the total of all the packets destined to the Ethernet Interface and the Satellite to Satellite routed packets.
Total IP Packets routed to Sat	**Read Only**	Total IP Packets routed to Sat is the summation of the Unicast, Multicast and Broadcast packets routed to the Satellite Interface.
Total IP Packets routed to Ethernet	**Read Only**	Total IP Packets routed to Ethernet is the summation of the Unicast, Multicast and Broadcast packets routed to the Ethernet Interface.
IGMP Packets Received	**Read Only**	Number of IGMP Packets received
IP Options Packets Recevied	**Read Only**	Number of IP Options Packets received.
Dropped – total	**Read Only**	The Total Packets dropped counter indicates the number of total packets that were dropped by the CiM.
Dropped - TTL Expired	**Read Only**	The packet was dropped because the Time-To-Live value in the IP header has reached 0. This means that the packet has exceeded it maximum allowed number of hops without reaching its destination.
Dropped – BAD IP Header Checksum	**Read Only**	The Bad IP Header Checksum counter indicates the total number of packets that were received by the CiM that contained CRC errors. If received packets contain CRC errors, then the CiM discards the packet.
Dropped – No Route	**Read Only**	The destination address of the packet does not match any of the configured routes in the CiM Route table. The CiM has no choice but to discard the packet since it has no idea where it should go next.
Dropped – Filtered Multicast Sat to Ethernet	**Read Only**	Multicast was dropped because route for this packet did not specify Satellite to Ethernet (SAT->ETH) routing.

Menu Options/Fields	Entry	Description
Dropped – Filtered	**Read Only**	Limits certain types of traffic that should not leak to Satellite. For example, broadcasts destined for Satellite LAN
Dropped – Multicast Disable Group	**Read Only**	Multicast packet was dropped because, although route existed, IGMP is being used, and there is no client requesting forwarding of this traffic.
Dropped – No ARP Entry	**Read Only**	The *Unicast Packet ARP Fail* counter indicates the number of Unicast packets that were received by the CiM and were destined for a device on the same subnet as the CiM, but were dropped because the device specified in the destination IP packet of the received packet has not yet responded to an ARP. After power-up, this counter typically increments for the first three seconds that packets are received for a device on the same subnet as the CiM.
Dropped – Bad Buffer Length	**Read Only**	IP length)as specified in packet header) was greater tha payload received in the Ethernet packet. This would indicate the packet was truncated before arriving.
Dropped – Bad IP Version	**Read Only**	The CiM only supports Ipv4. The first four bites of the IP header field (specifies IP Version) are checked.
Dropped – Miscellaneous	**Read Only**	Catch all bucket for packets experiencing non-standard problems.
Dropped – QOS	**Read Only**	Packet was dropped because for a particular route (that it matched) the maximum bandwidth has been exceeded.
Dropped – QOS buffers	**Read Only**	Packet was dropped because the buffers used to store QOS packets have been exhausted.
Dropped – Dropped buffers	**Read Only**	Packet dropped because the CiM's buffers have exhausted. This will usually occur when the packet rate through the CiM has exceeded the factory defined limitiations.
Reset Counters	**R**	Executing this menu option resets all statistics gathered for the receiver to zero.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7.3 ADMINISTRATIVE DATABASE OPERATIONS PAGE

The *Administrative Database Operations* Page is activated from the *Operations and Maintenance* Page.



The Database Operations option allows the user to view, save, or erase an existing user configuration of the CiM. A CiM uses these types of configuration files to initialize itself on power-up.

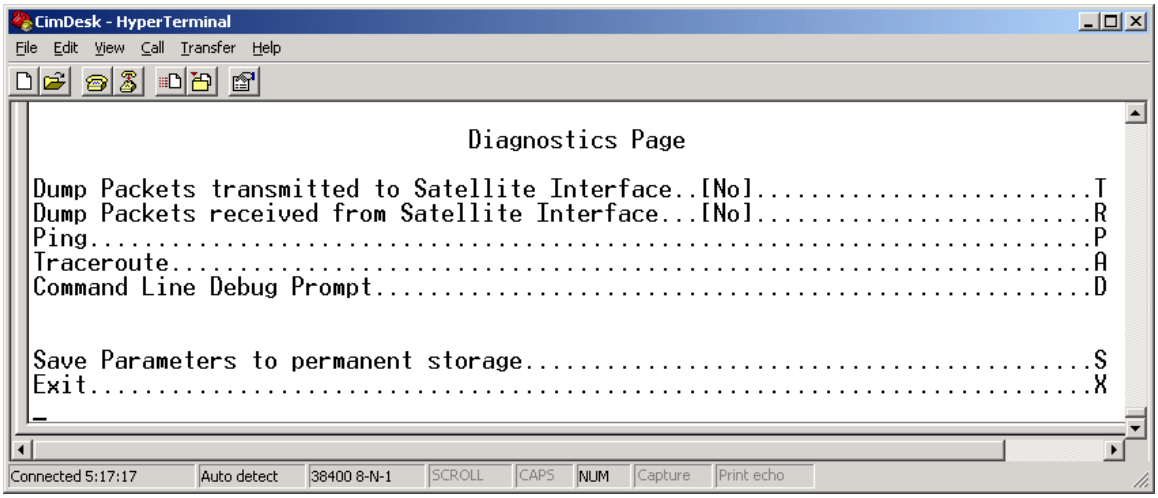
The User Configuration File allows a User to over-write the values defined in the Factory Configuration file. This allows full customization of a CiM without erasing a set of parameters defined from the factory. The User configuration file can also be retrieved or overwritten via FTP by specifying the filename ‘param1’.

The *Administrative Database Operations* Page contains the following options/fields:

Menu Options/Fields	Entry	Description
Save Parameters to permanent storage	**P**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Restore Factory Default	**R**	Restores the CiM settings to “safe” values as defined by the factory.
Load Parameters from permanent storage	**L**	This option overwrites the current configuration of the CiM with the configuration last saved to permanent storage. It allows the user to perform an “Undo” type operation if the CiM put into an undesirable state by the user.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7.4 DIAGNOSTICS PAGE

The *Diagnostics* Page is activated from the *Operations and Maintenance* Page.



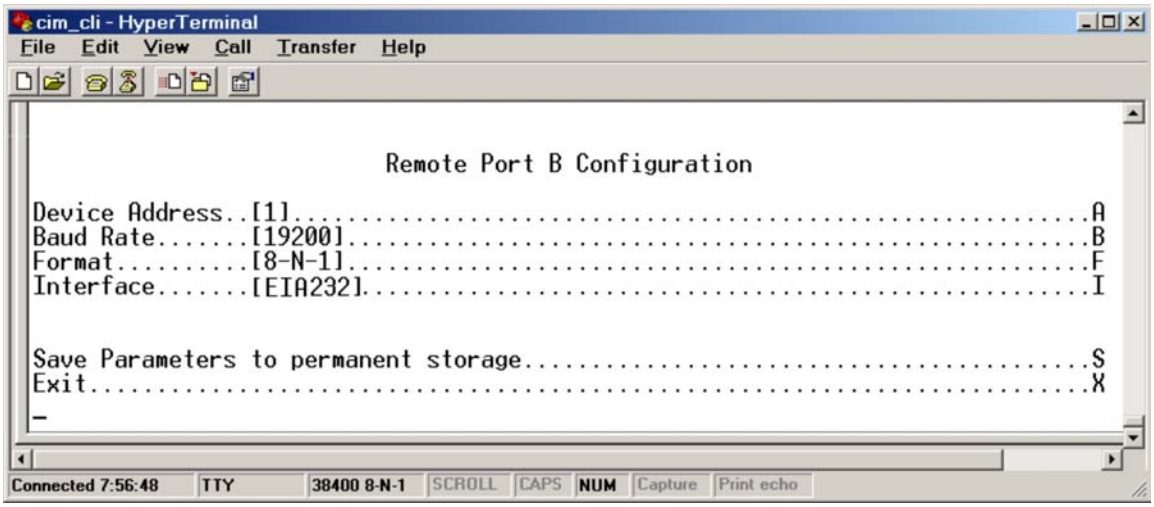
The *Diagnostics* Page contains the following options/fields:

Menu Options/Fields	Entry	Description
Dump Packets transmitted to Satellite Interface	**T**	Toggles [Yes] and [No] Executing this menu option forces the CiM to dump a hexadecimal representation of each packet that it transmits over the Satellite Interface. **Notes:** 1. Great care should be taken when using this option, if the unit is processing high data rates, then the terminal screen will scroll data for very long periods of time. 2. Selecting the menu option a second time terminates the dump operation. Each selection toggles the value of the dump engine.
Dump Packets received from Satellite Interface	**R**	Toggles [Yes] and [No] Executing this menu option forces the CiM to dump a hexadecimal representation of each packet that it receives from the Satellite Interface. **Notes:** 1. Great care should be taken when using this option, if the unit is processing high data rates, then the terminal screen will scroll data for very long periods of time. 2. Selecting the menu option a second time terminates the dump operation. Each selection toggles the value of the dump engine.
Ping	**P**	Enter the ip address in aaa.bbb.ccc.ddd format
Traceroute	**A**	Enter the ip address in aaa.bbb.ccc.ddd format

Menu Options/Fields	Entry	Description
Command Line Debug Prompt	**D**	Enter the password to access the debug command line. Note: This is reserved for Customer Service and engineering use.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.7.5 REMOTE PORT B CONFIGURATION PAGE

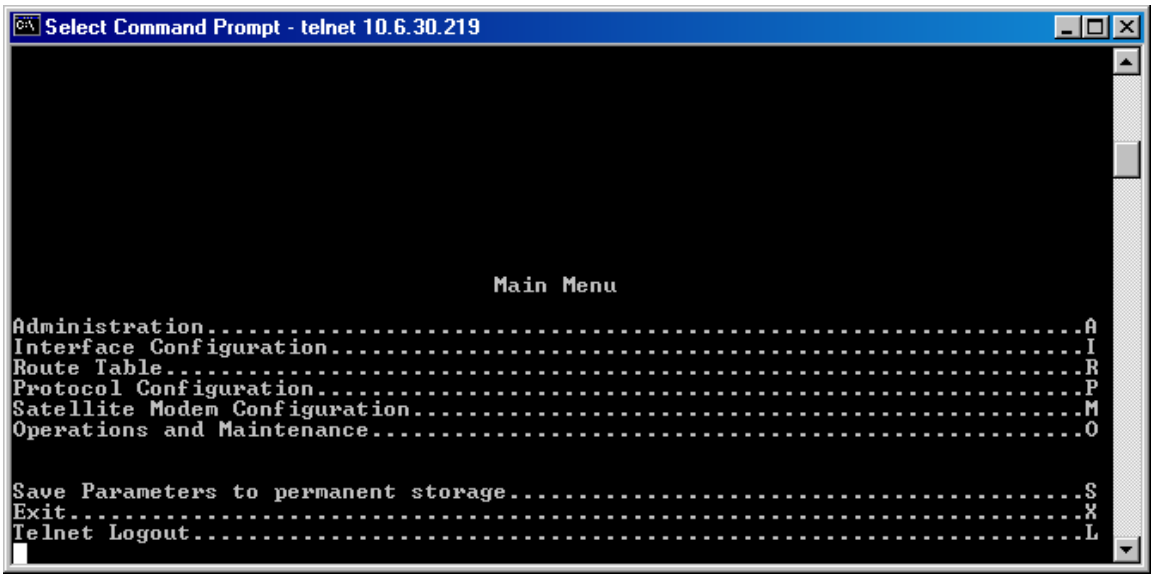
The *Remote Port B Configuration* page is activated from the *Operations and Maintenance* page.



The *Remote Port B Configuration* page contains the following options/fields:

Menu Options/Fields	Entry	Description
Device Address	**A**	Valid ranges are from 0 to 9999
Baud Rate	**B**	The baud rate defines the speed of the serial interface. The user can iterate through the possible rates by successively selecting the menu option. This parameter will assume one of the following bits per second rates : 1200, 2400, 4800, 9600, 19200, 38400
Format	**F**	The Remote Port B interface support three formats. Each format describes the Data Bits, Parity, Stop Bits that the serial interfaces will use to communicate. The user can iterate through the list of possible values by successively selecting the menu option. This parameter will assume one of the following values: [8-N-1], [7-E-2], [7-0-2]
Interface	**I**	The Interface setting configures the UART to operate in one of three types of physical EIA-xxx interfaces (EIA-232, EIA-485, EIA485-4W).The user can iterate through the list of possible values by successively selecting the menu option.
Save Parameters	**S**	This option allows a user to save the current configuration of the CiM to permanent storage. This configuration will be restored on each successive power cycle of the CiM.
Exit	**X**	This option allows a user to exit the current menu and return to its parent menu.

11.2.8 TELNET - LOGOUT OPTION



When connecting to the CiM through a telnet session, the menus present another option to logout of the telnet session. This logout option is in all the menus and when selected, logs the user out of the telnet session, returning control of the CLI to the serial interface.

NOTES:

Chapter 12.
Web Server Pages

12.1 WEB SERVER USAGE

The embedded Web Server application provides the user with an easy to use interface to configure and monitor all aspects of the CiM-550 modem. These web pages have been designed for optimal performance when using MicroSoft's Internet Explorer 5.5 or higher.

12.2 WEB SERVER MENU TREE

The CiM Web Server Menu Tree is shown in the table below.

Table 12-1. CiM-550 Web Server Menu Tree

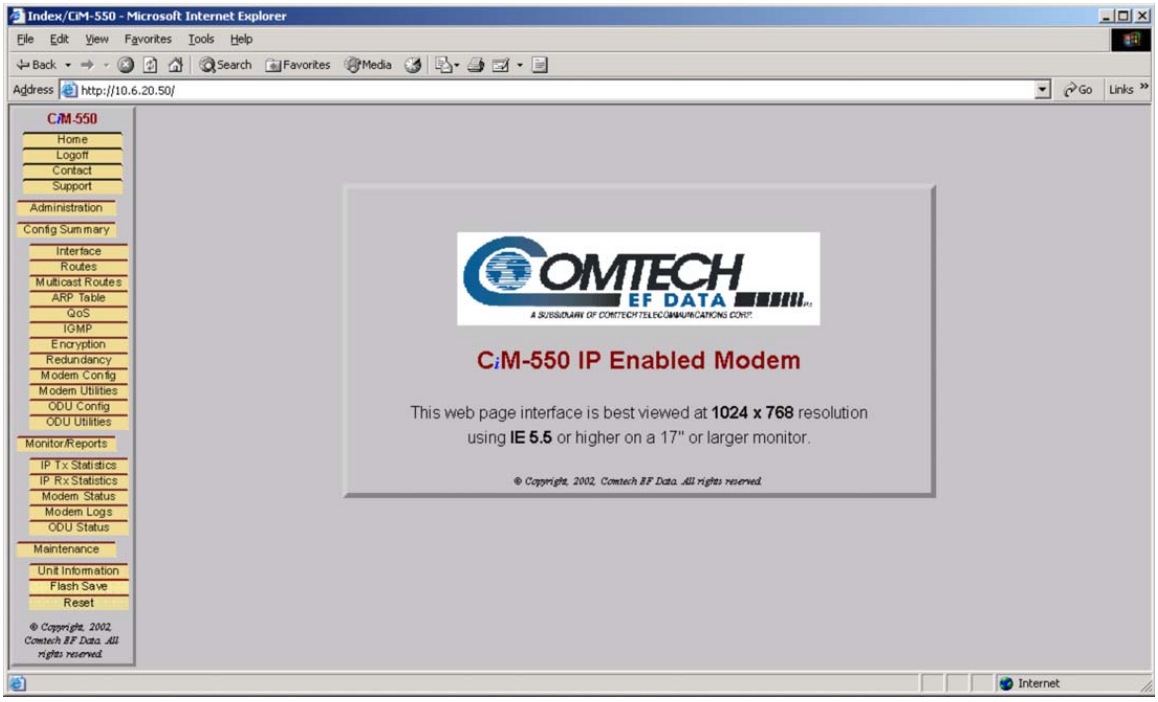
Level 1	Level 2	Level 3
ADMINISTRATION	System Access Info	Administrator Name/PW Read Only Name/PW Read/Write Name/PW
	Host Access List	IP Address/Mask 1 – 4 Access List Enable/Disable
	Features – Standard	Telnet Enable/Disable
	Features - Optional	QoS Enable/Disable Datagram Compression Enable/Disable IGMP Enable/Disable NAPT Enable/Disable Easy Connect ™ Enable/Disable TCP Acceleration Enable/Disable DES Transmit Enable/Disable DES Receive Enable/Disable Multicast Enable/Disable
	SNMP	SNMP Enable/Disable
CONFIGURATION	Configuration Summary	Ethernet (LAN) Satellite (WAN) Features
	Interface	Ethernet (LAN) Satellite (WAN) Remote Port Console Port
	Routes	Route Table Entry Route Table
	Multicast Routes	Multicast Route Table Entry Multicast Route Table
	ARP Table	Addresses ARP Table
	QoS	QoS Table Entry QoS Table
	IGMP	Transmitter IGMP Client Receiver IGMP Client IGMP Table
	Encryption	Transmit Receive
	Redundancy Configuration	Local Unit Management IP Address/Mask Redundant Unit Management IP Address/Mask Redundant Traffic IP Address/Mask Current Redundancy State Force Unit Offline
	Modem Configuration	Transmit Receive Modem Reference Clock
	Modem Utilities	Date and Time Circuit ID

Level 1	Level 2	Level 3
	ODU Configuration	ODU selection Up Converter Parameters Down Converter Parameters Unit Parameters Low Noise Amplifier Parameters ODU Circuit ID
	ODU Utilities	ODU Selection Redundancy Control LNA Current Date and Time Modem Events Log
MONITORING & REPORTS	Monitoring & Reports Summary	HDLC Transmit Latch Status HDLC Transmit Clock Status HDLC Receive Latch Status HDLC Receive Clock Status Total Packets Transmitted Total Paclets Received
	IP Tx Statistics	Route Name Packets Transmitted Packets Dropped Average Data Rate
	IP Rx Statistics	IP Routing Statistics
	Modem Status	General Information
	Modem Logs	Modem Events Log Modem Statistics Log Unread Events Unread Statistics
	ODU status	ODU Selection Maint. Parameters Supply Voltages ODU Alarms Supply Voltages Tuning Voltages Phase Locked Loops Temperature Currents Trnsmit RF Output Power Thermal Currents Events Log
MAINTENANCE	Unit Info	Uptime Modem Serial Number Software Version – IP Module
	Flash Save	
	Reset	

12.3 WEB SERVER PAGES

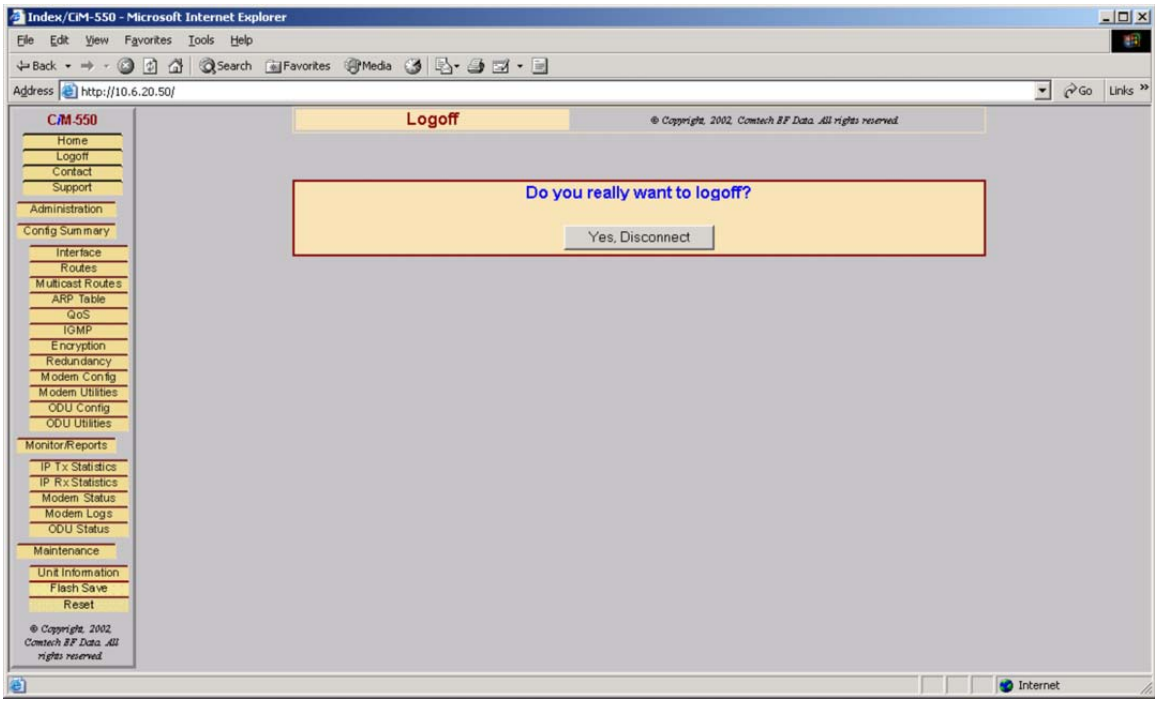
The CiM web menu pages are show here in order of appearance in the menu.

12.3.1 HOME PAGE



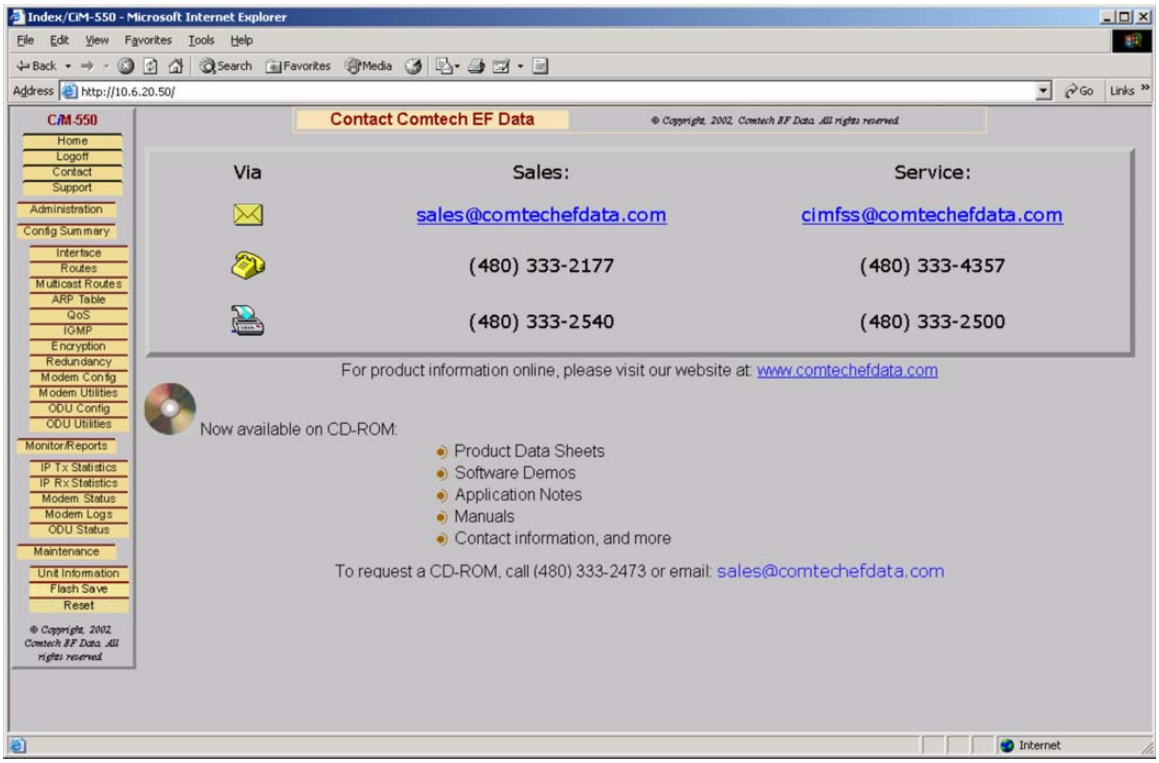
Welcome to the CiM-550 Web Interface. The following sections will give you a brief introduction to each web page available. See the CDM-550 manual, the CiM Usage manual or the CLI section for further detailed explanation of CiM communication options.

12.3.2 LOGOFF



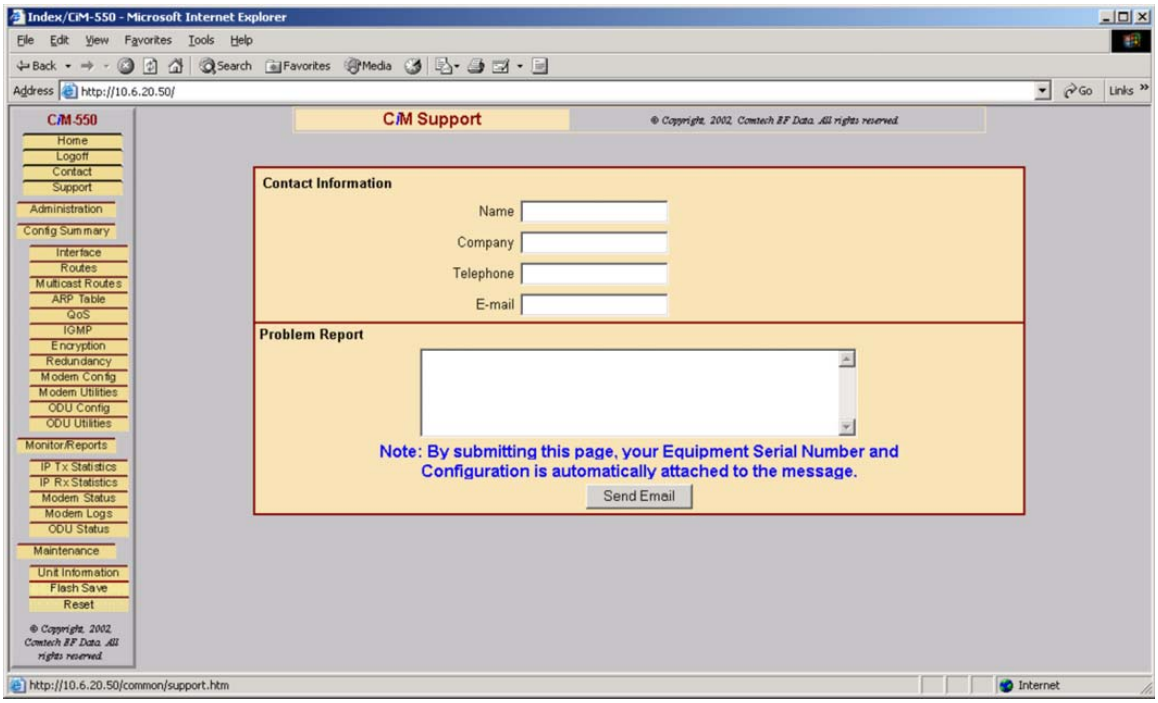
Currently the CiM only allows one connection to the CLI or the Web Interface. Use this option to formally disconnect from the Web Interface. Upon disconnection, you will be required to close the Web Browser so as to delete the security cookie to the CiM.

12.3.3 CONTACT INFORMATION



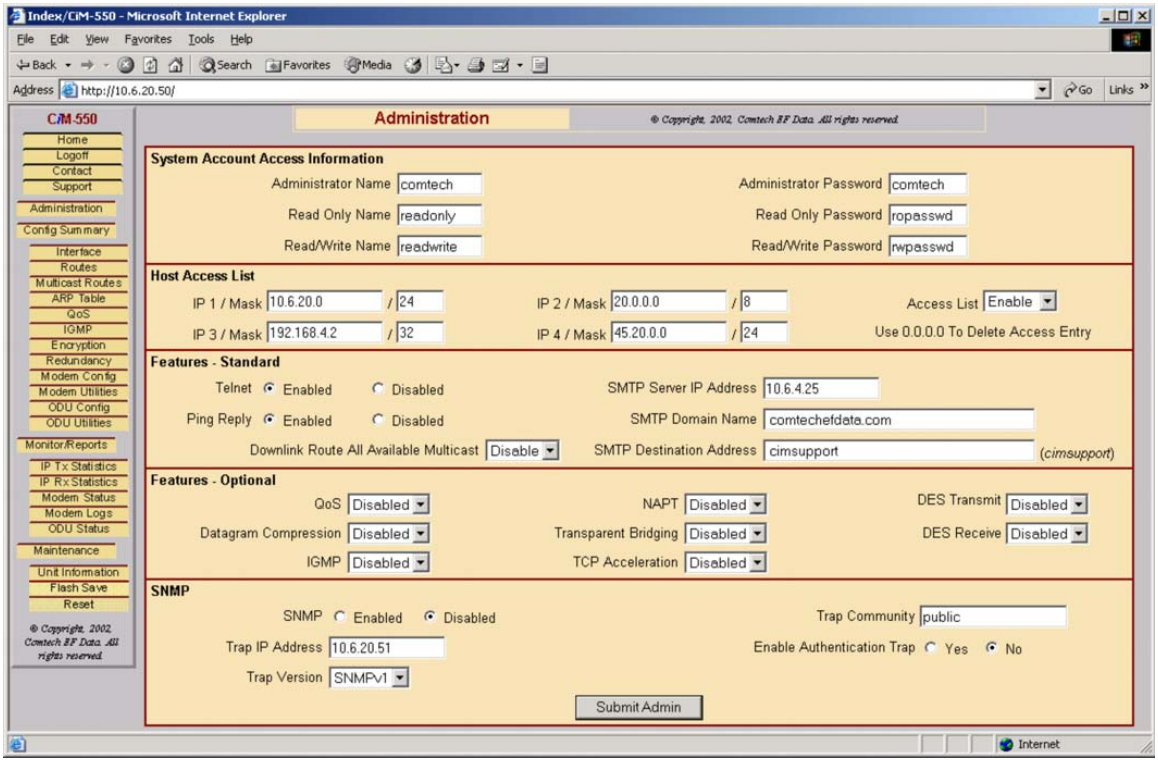
This page provides basic contact information to reach ComTech EF Data Sales and Customer Service via phone or automated e-mail links.

12.3.4 SUPPORT



The CiM Support page allows you to send an email to a pre-specified location. The email will contain the modem's serial number and configuration information, which is attached automatically. The CiM uses SMTP (simple mail transport protocol) to send email and will require the modem's administrator to specify the SMTP server, domain name and destination name on the Administration Screen for SMTP to operate correctly. The problem report area of the display allows up to 2,000 characters maximum.

12.3.5 ADMINISTRATION



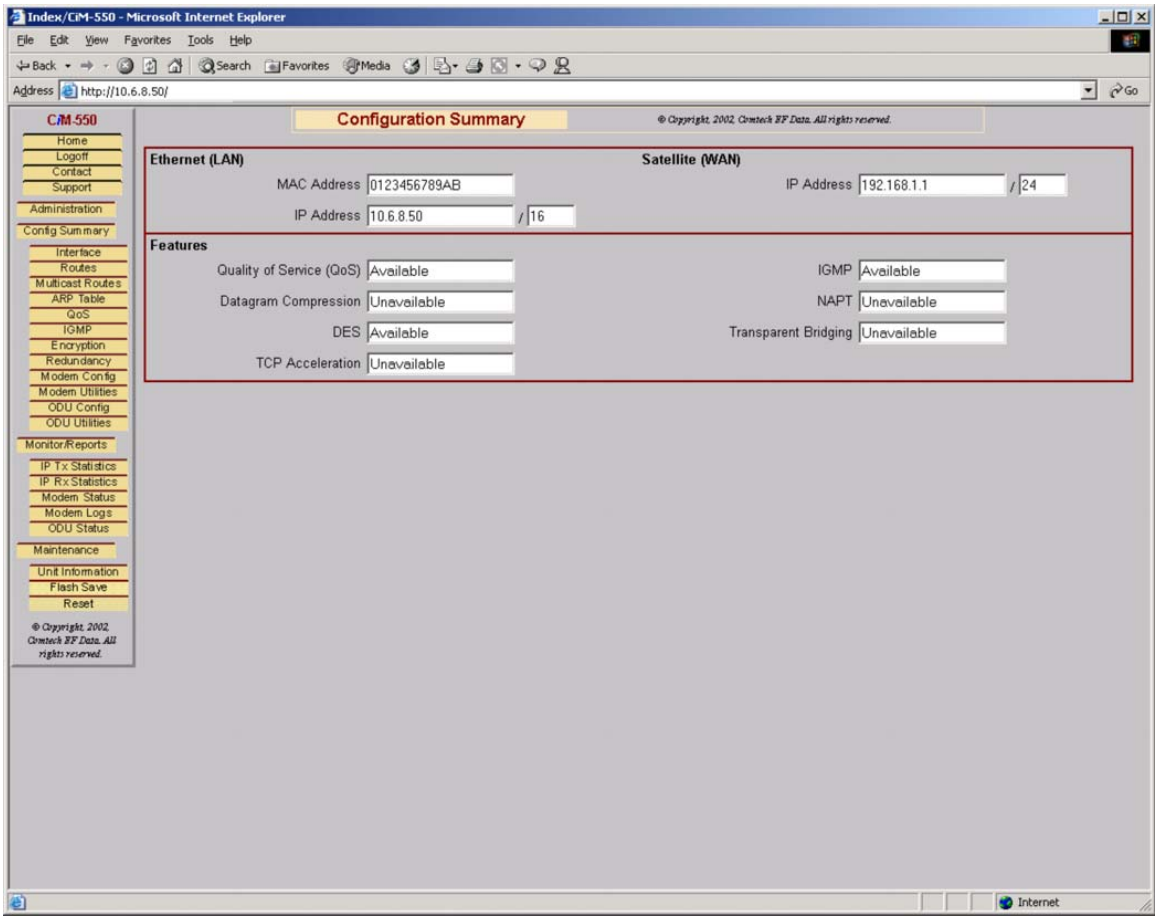
The Adminstration Page provides access to all C*i*M-550 IP administration features. This includes System Account Information, Host Access Lists, Feature Enable/Disable, etc., as described in the following table:

Table 12-2. Admin Fields

Field	Description
Account Names & Passwords	Enter a unique name that identifies each kind of user. Admin users can access all areas of the system and should be kept to a single individual. Read Only users can access all of the system except for the administrator's screen. Finally, the read only user has minimal access to areas considered not to be dangerous to the system operation.
Host Access List	Enter a valid IP address and mask of networks allowed to access the CiM. Use 0.0.0.0 to delete an entry. You may turn this feature on and off, however, be careful to include your own address within the list or you may lose connectivity to the CiM. Should this occur, you will need to repopulate the access list using the CLI.
Standard Features	This area allows you to enable and disable Telnet connectivity and ping replies as well as set up the SMTP interface for the Support page. For SMTP, enter a valid SMTP server address where you want support messages to go. Also, enter the SMTP domain name and receiving user name in the fields provided.

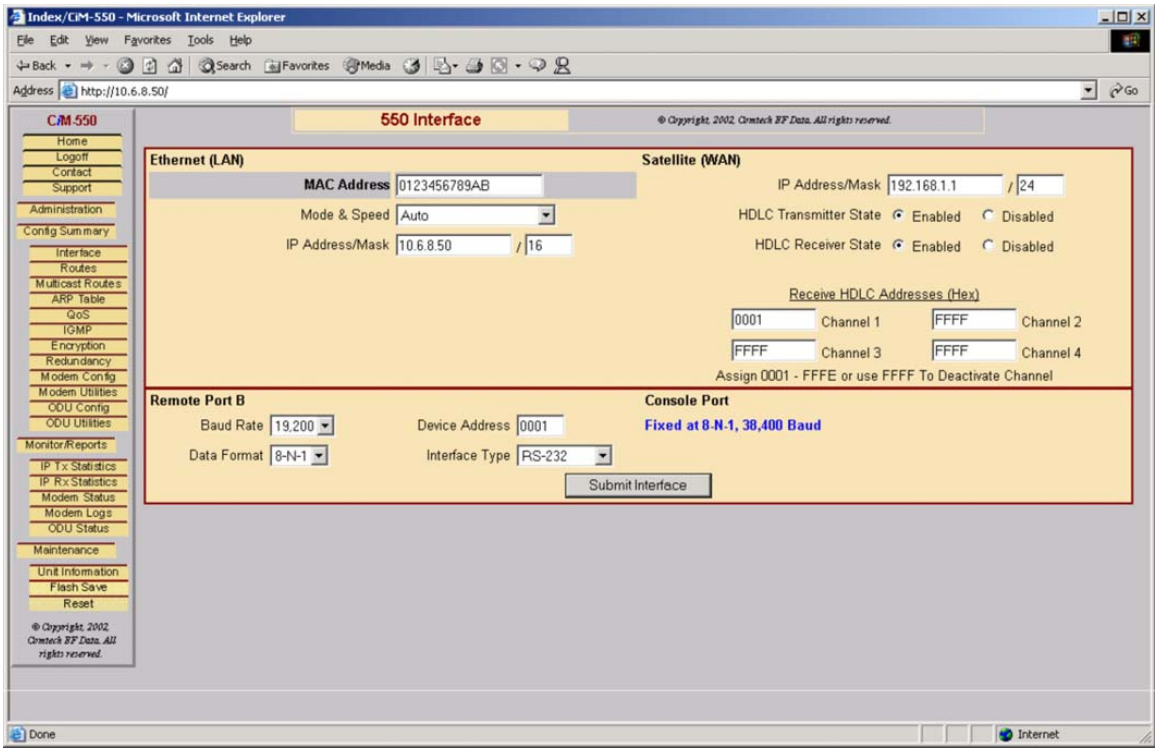
Field	Description
Optional Features	This area allows you to enable or disable certain capabilities of the CiM system.
SNMP	Use this area to setup SNMP connectivity and security.

12.3.6 CONFIGURATION SUMMARY



This page provides a read only summary of the IP administration parameters.

12.3.6.1 INTERFACE CONFIGURATION



This page is used to configure both the Ethernet (LAN) and Satellite (WAN) interfaces. In addition, control of Baud Rate and Character Format for the both the 'Remote Control B' port and the 'Console' Port are provided on this page.

Table 12-3. Interface Configuration Fields

Field	Description
Ethernet MAC Address	The Ethernet MAC address is a unique number assigned by the factory during assembly of the CiM. This is a read-only parameter.
Ethernet Mode & Speed	The Ethernet Mode & Speed selection defines the type of Ethernet connection being made to the C*i*M. The possible selections are: Auto 10 MB/sec Half Duplex 100 MB/sec Half Duplex 10 MB/sec Full Duplex 100 MB/sec Full Duplex
Ethernet IP Address and Mask	Specifies the IP Address and Network Mask of the C*i*M

Field	Description
Satellite (WAN) IP Address and Mask	The C*i*M modem has two network interfaces: the Ethernet interface and the Satellite interface. Each of these network interfaces must be assigned an IP Address. The only requirements on the Satellite IP Address are: 1) that is must not be on the same subnet as the Ethernet Interface; 2) it must be on the same subnet as the Satellite IP address assigned to the CiM modem on the other end of the satellite link. Since the only devices communicating on the WAN link are CiM modems, the Sateliite IP Address can usually be an arbitary address assigned to many different systems. However, because of the possibility of conflict with an assigned Ethernet IP or the IP Address of a defined route, the user can select this value.
HDLC Transmitter State	The Transmitter state reflects the current state of the C*i*M as a routing device. This parameter has one of two values: Enabled Disabled When the transmitter state is enabled, the C*i*M will allow routing of packets from its Ethernet (LAN) interface to its Satellite (WAN) interface. When the transmitter state is disabled, the C*i*M will not allow routing of any packets over its Satellite (WAN) interface.
HDLC Receiver State	The Receiver state reflects the current state of the C*i*M as a routing device. This parameter has one of two values: Enabled Disabled When the Receiver state is enabled, the C*i*M will allow routing of packets from its Satellite (WAN) interface to its Ethernet (LAN) interface. When the Receiver state is disabled, the C*i*M will not allow routing of any packets received on its Satellite (WAN) interface.
Satellite (WAN) Receiver HDLC Addresses	The C*i*M allows the user to define up to four (4) different HDLC Addresses that can cary user information on the Satellite (WAN) interface.
Remote Port B Baud Rate	Allows the users to configure the baud rate of this port to any one of the following setting: 4800 9600 19200
Remote Port B Data Format	Allows the users to configure the character format of this port to any one of the following setting: 8-N-1 7-E-2 7-O-2
Remote Port B Device Address	Allows the user to specify the address of the modem when communicated via the remote port.

Field	Description
Remote Port B Interface Type	Allows the user to specify which communication standard the physical interface will comply to: EIA-232 EIA-485-2W EIA-485-4W
CLI Console Port Baud Rate	Fixed at 38,4000 Baud
CLI Console Port Character Format	Fixed at 8-N-1.

12.3.6.2 ROUTES CONFIGURATION

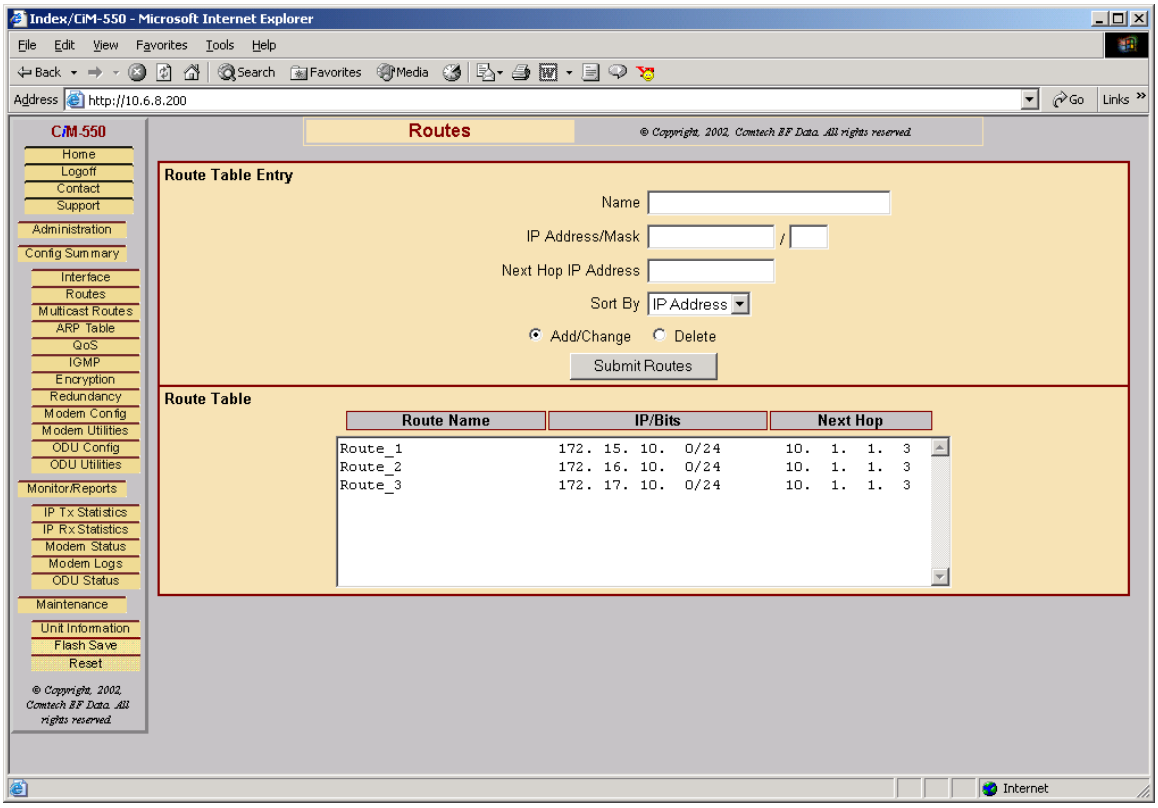


Table 12-4. Routes Configuration Fields

Field	Description
Name	Enter the name of the route to add or delete. The route name is case sensative however leading and trailing white space is automatically removed.
IP Address/Mask	Enter the destination IP address and mask. The mask and the IP address must be valid.
Next Hop IP Address	The Next Hop Address is used for WAN routing of traffic from CiM to CiM.
Sort By	The route table may be sorted by route name or IP address.

12.3.6.3 MULTICAST ROUTES CONFIGURATION

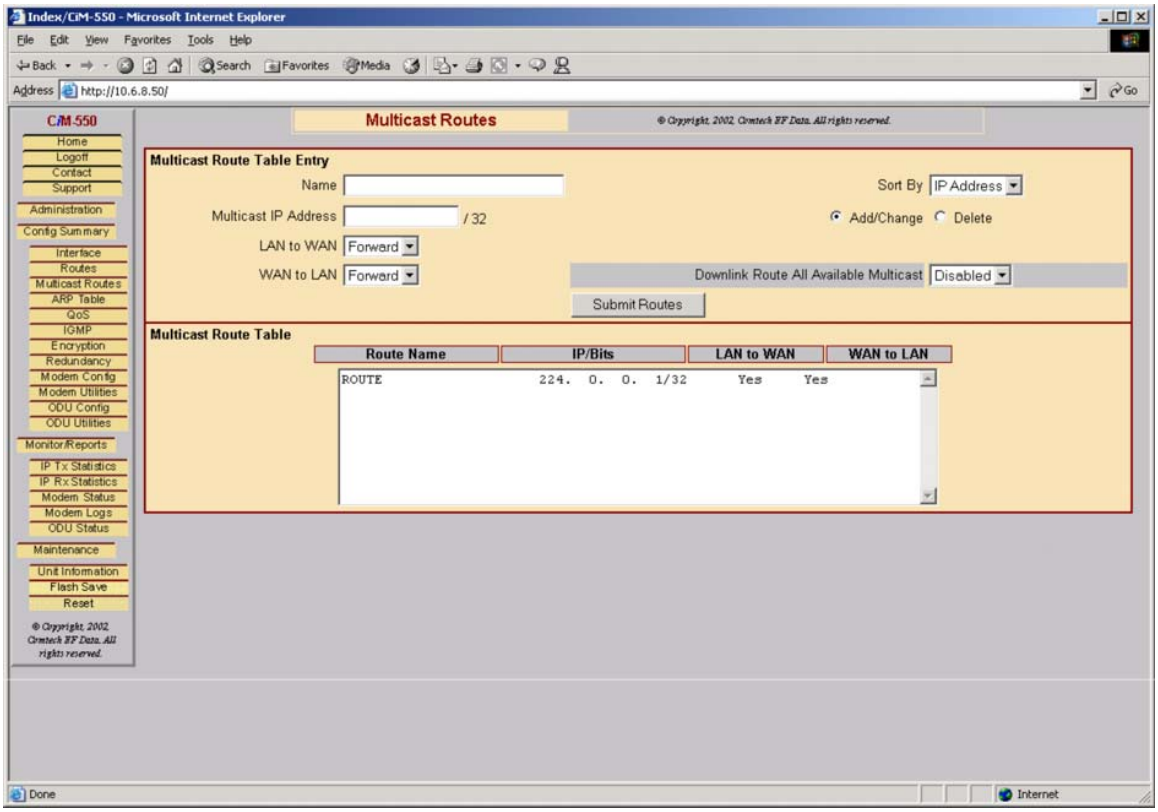


Table 12-5. Multicast Routes Configuration Fields

Field	Description
Name	Enter a valid route name to add or delete. This field is case sensative, however leading and tailing white space is automatically removed.
Multicast IP Address	Enter a valid multicast route address. Multicast addresses have the Class A value of 224 (ie, 224.10.2.1). IP mask is set to 32 bits.
LAN to WAN	Set to indicate whether this multicast address routes traffic from the Lan to the Wan (Ether to Satellite).
WAN to LAN	Set to indicate whether this multicast address routes traffic from the Wan to the Lan (Satellite to Ether).
Sort By	Allows sorting of the multicast address table by route name or IP address.
Downlink Route All Available Multicast	This read-only parameter lets the user know if the administrator has enabled the “Downlink Route All Available” feature.

12.3.6.4 ADDRESS RESOLUTION PROTOCOL (ARP) CACHE

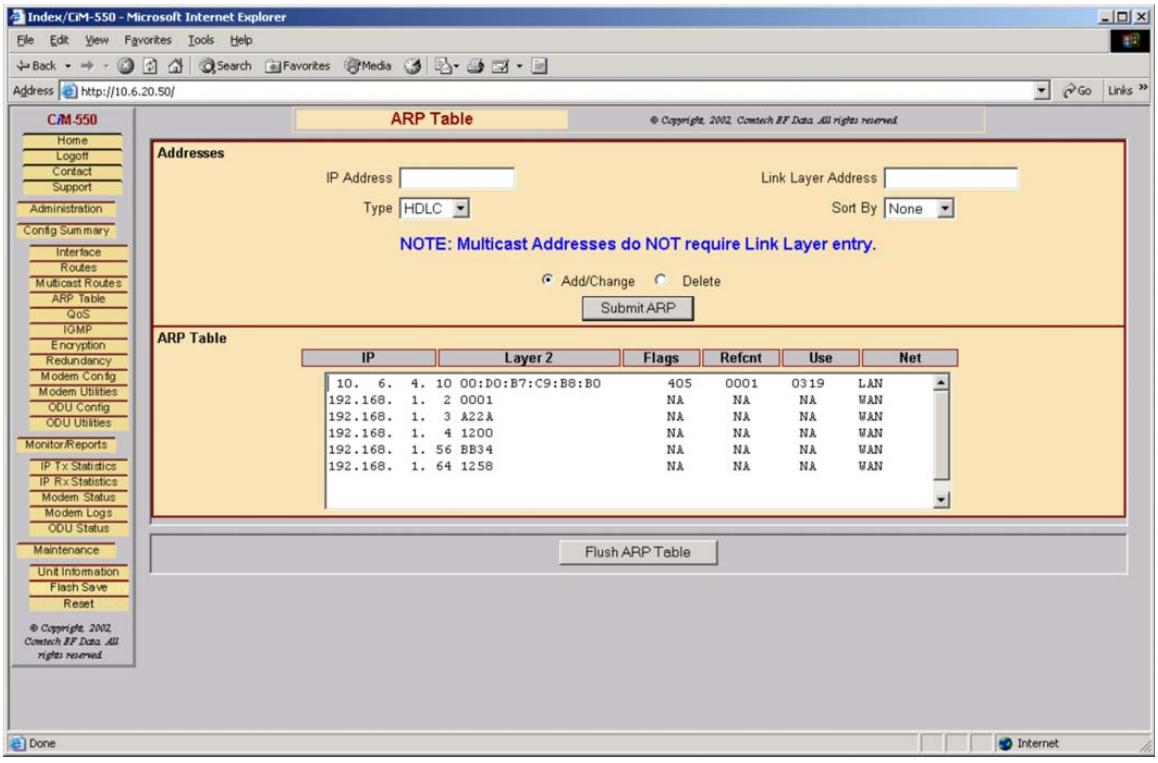


Table 12-6. ARP Table Fields

Field	Description
IP Address	Enter a valid ARP table IP address to add or delete.
Link Layer Address	Enter a valid Link Layer Address which may be a device MAC address or HDLC address. The field requires hexidecimal input. For IEEE48 addresses, enter the value in the format of “xx:xx:xx:xx:xx:xx”, for HDLC, enter the value in the format of “xxxx”.
Type	Set to indicate the type of Link Layer Address entered such as IEEE48 or HDLC.
Sort By	The ARP table may be sorted by IP addresses or Link Layer 2 addresses.

12.3.6.5 QOS (QUALITY OF SERVICE) CONFIGURATION

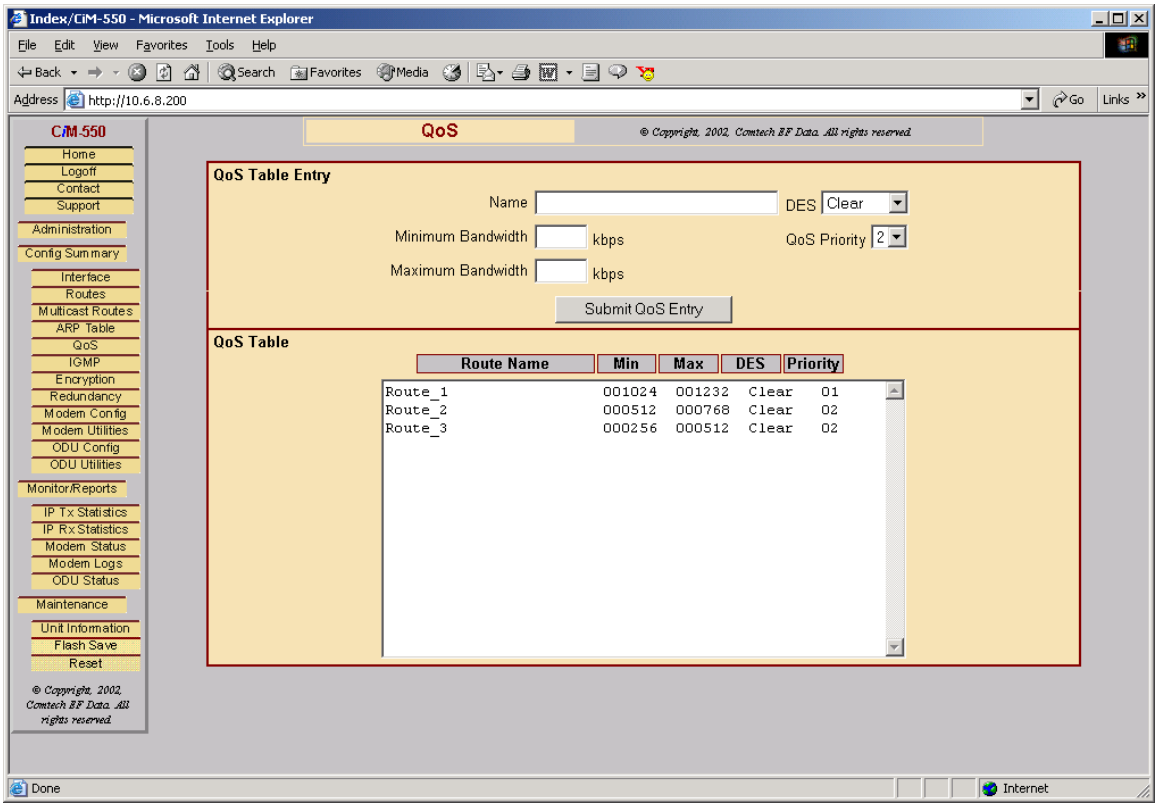


Table 12-7. QoS Fields

Field	Description
Name	Enter a valid Route Table Name. This field is case sensitive.
Minimum/Maximum Bandwidth	Enter the desired minimum and maximum bandwidth settings for the selected route.
Priority	Enter the desired priority (1 or 2) settings for the selected route. NOTE: See Section 6.2.3.1 CLI/Telnet QoS/DES Configuration for more information on Min/Max and Priority settings.
DES (Encryption)	Select the type of DES key used for this route.

12.3.6.6 IGMP CONFIGURATION

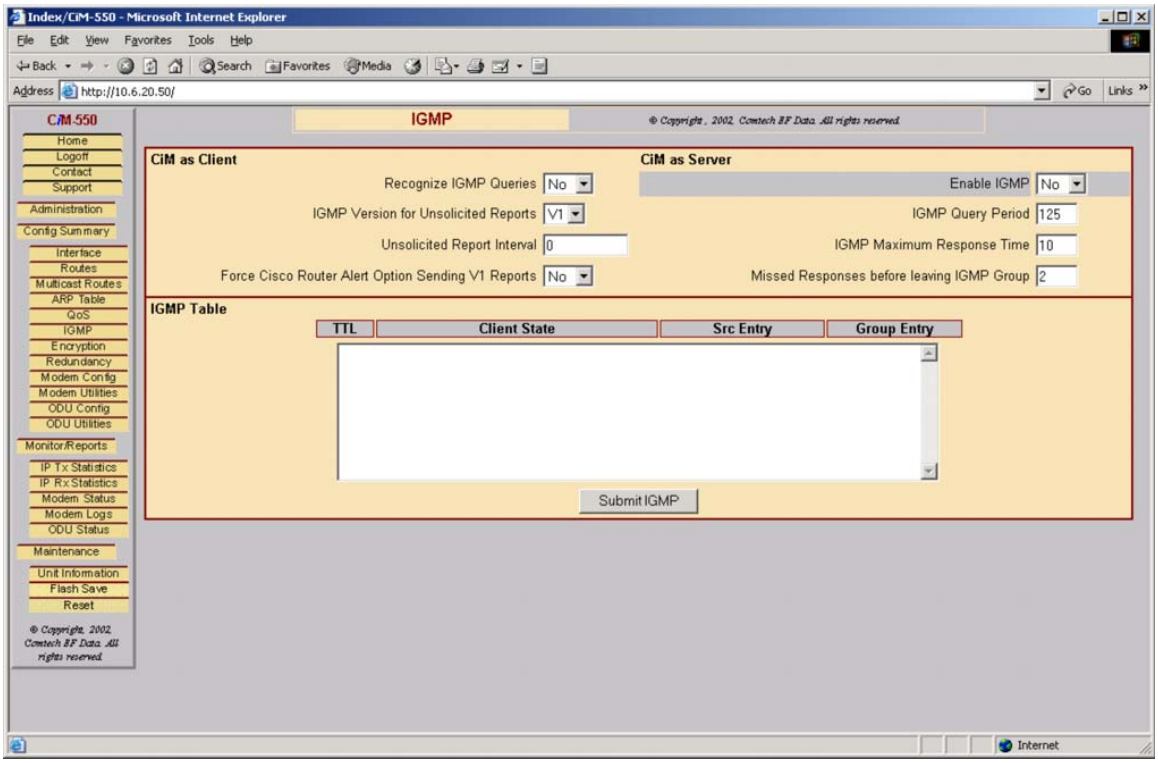


Table 12-8. IGMP Fields

Field	Description
Recognize IGMP Queries	Set to indicate whether to recognize IGMP queries to the CiM device.
IGMP Version	Set to indicate whether to send V1 or V2 IGMP reports.
Report Interval	Enter the report interval value for sending IGMP reports.
Cisco Router Alert	Set to indicate whether to send the Cisco Router Alert type packets when sending IGMP reports (V1 only).
Enable IGMP	This is a read-only indication, letting the user know if the administrator has enabled ro disabled IGMP.
IGMP Query Period	Set to indicate the query period used when querying group IP addresses.
IGMP Maximum Response Time	Set the maximum time to wait for an IGMP group IP to respond to query.
Missed Responses before leaving IGMP Group	Set to indicate the maximum number of IGMP queries a route may miss before being dropped from the group.

12.3.6.7 DES ENCRYPTION CONFIGURATION

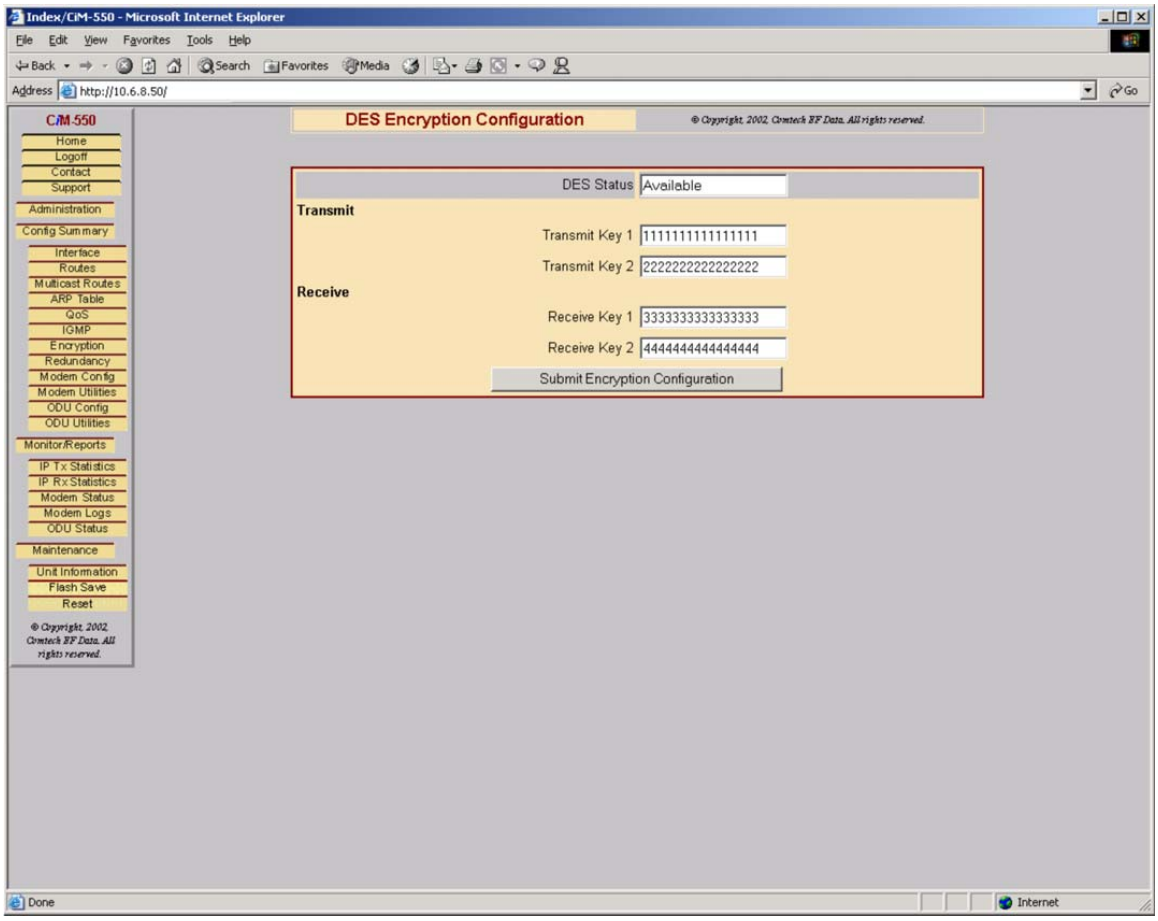


Table 12-9. DES Encryption Fields

Field	Description
DES Status	This global setting indicates whether DES is an available option for the CiM.
Transmit Key 1 & 2	Enter a valid 16 byte hexidecimal key used for encrypting transmitted packets. The receive side CiM should have these same values set for its Receive encryption Keys.
Receive Key 1 & 2	Enter a valid 16 byte hexidecimal key used for decrypting received packets. The receive side keys should match the transmit side keys from the far-end device.

12.3.6.8 REDUNDANCY CONFIGURATION

Note: This page is not configurable unless the modem is properly connected to a Comtech EF Data qualified Redundancy Switch. Refer to Section 11.2.6 CLI/Telnet Redundancy Configuration for CRS-100/CiM-550 cabling information.

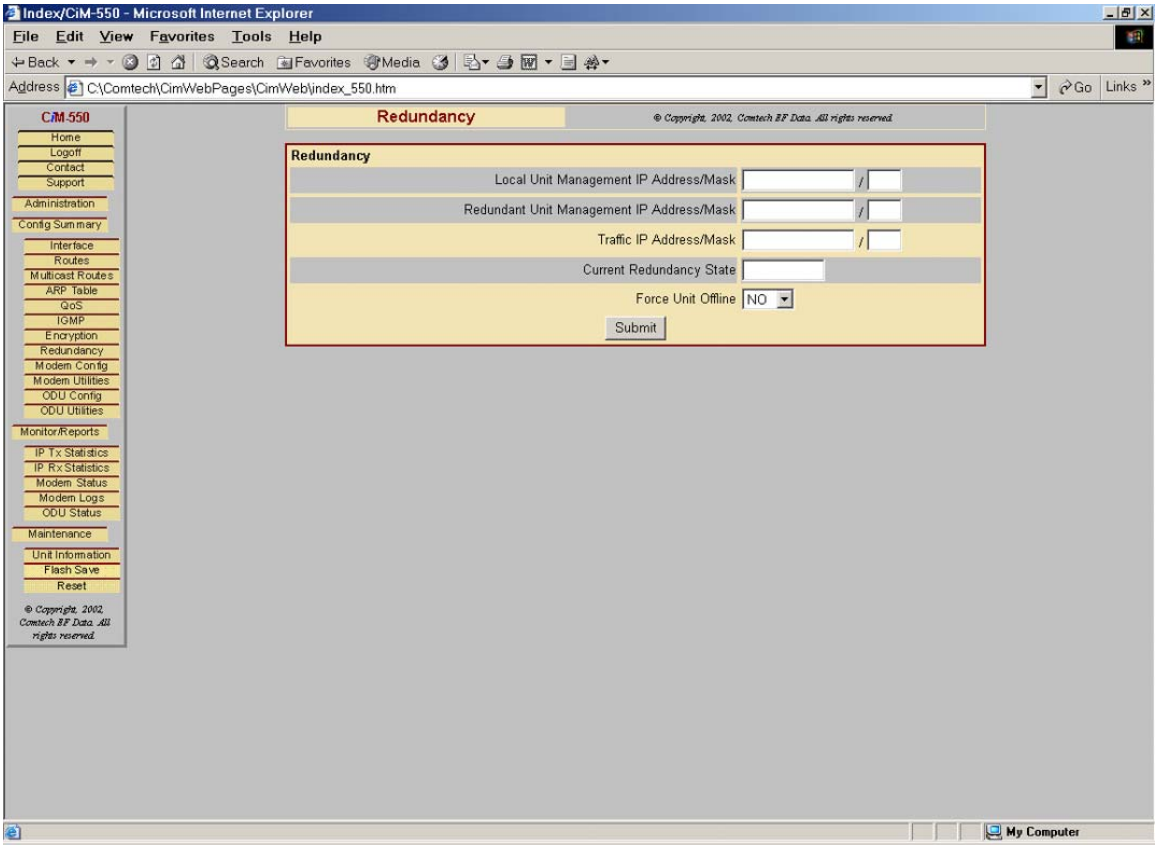
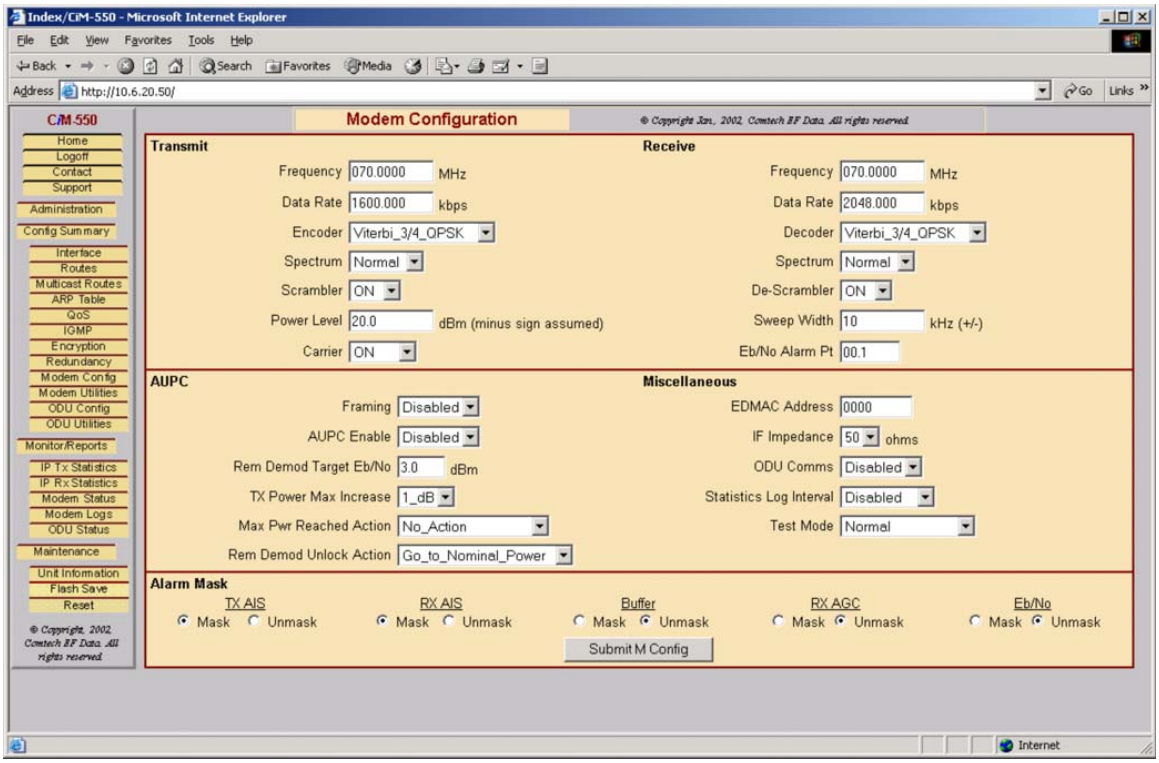


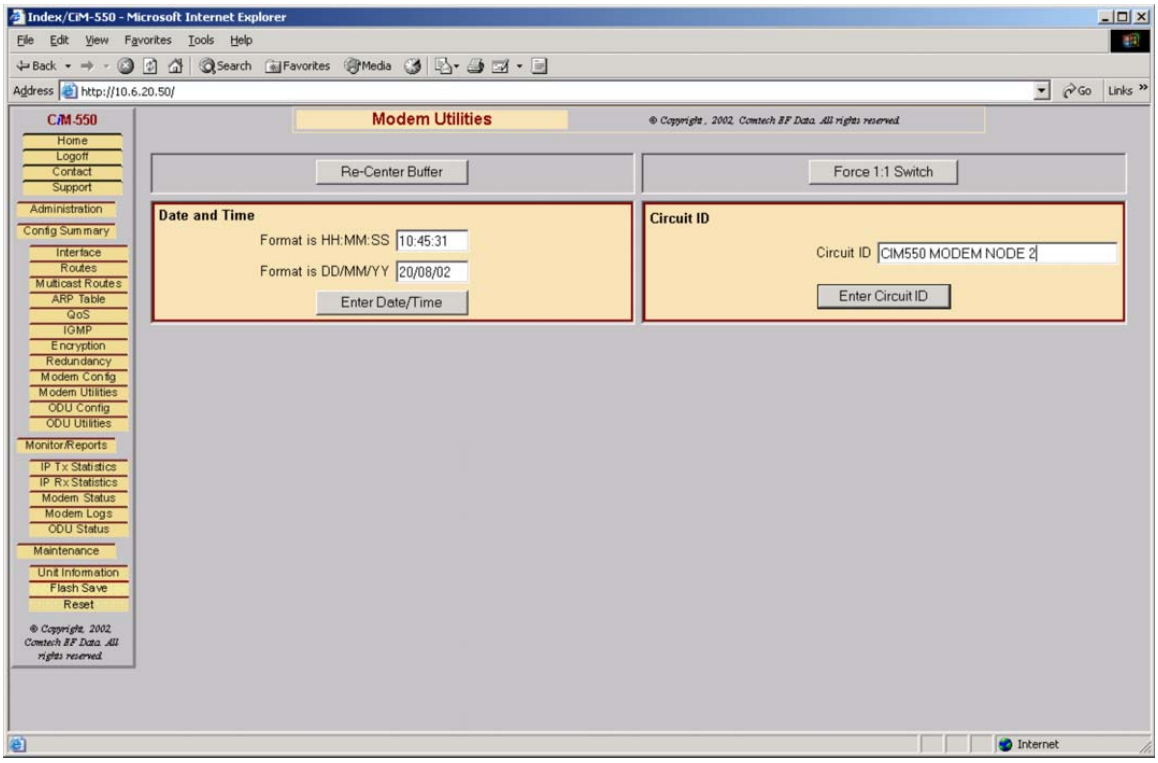
Table 12-10. Redudancy Configuration Fields

Field	Description
Local Unit Management IP Address/Mask	Read only field displays the CiM unit's IP address and mask values.
Redundant Unit Management IP Address/Mask	Read only field displays the redundant unit's IP address and mask values.
Traffic IP Address/Mask	Enter the traffic IP address and mask values. These values are stored in the redundant modem's memory and are used to address the redundant modem's CiM system.
Redundancy State	Read only field indicates whether the redundant device is online or offline.
Force Unit Offline	Forces redundant unit offline.

12.3.6.9 MODEM CONFIGURATION



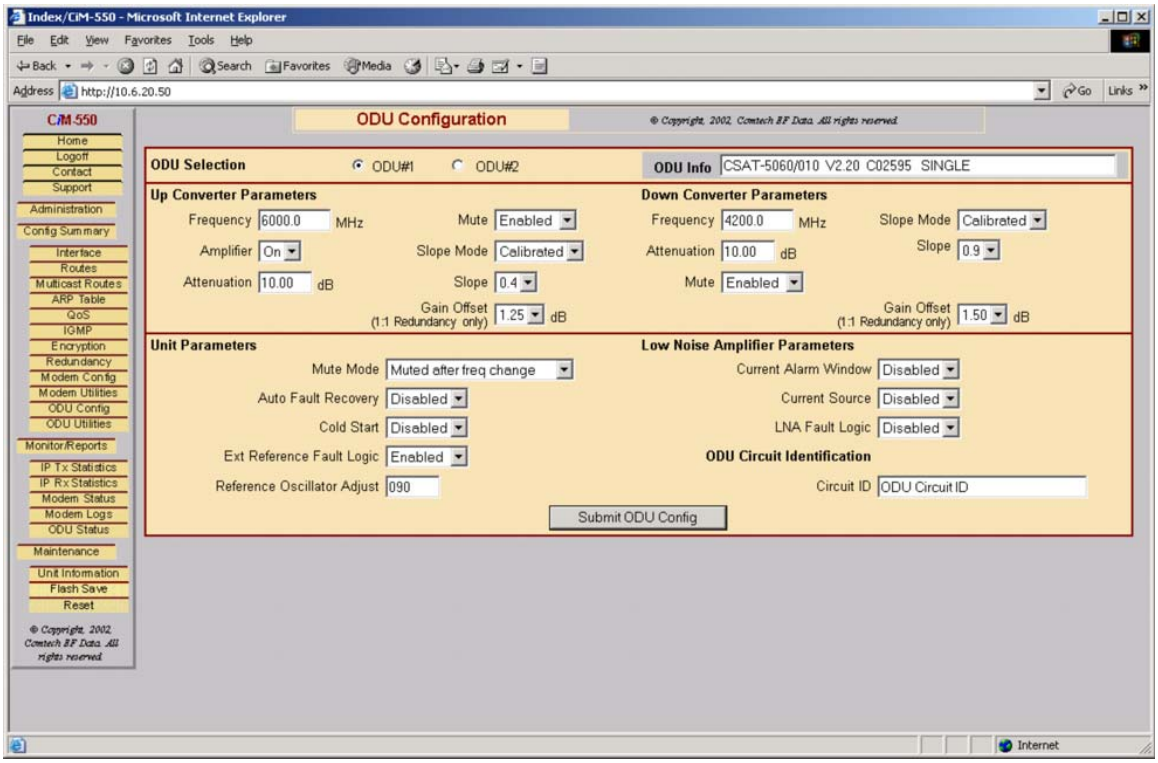
12.3.6.10 MODEM UTILITIES



The modem's time and date field may be changed on this display as well as the modem's front panel display identification string (Circuit ID). Please be aware that the CiM is synchronized to the modem's time and date fields.

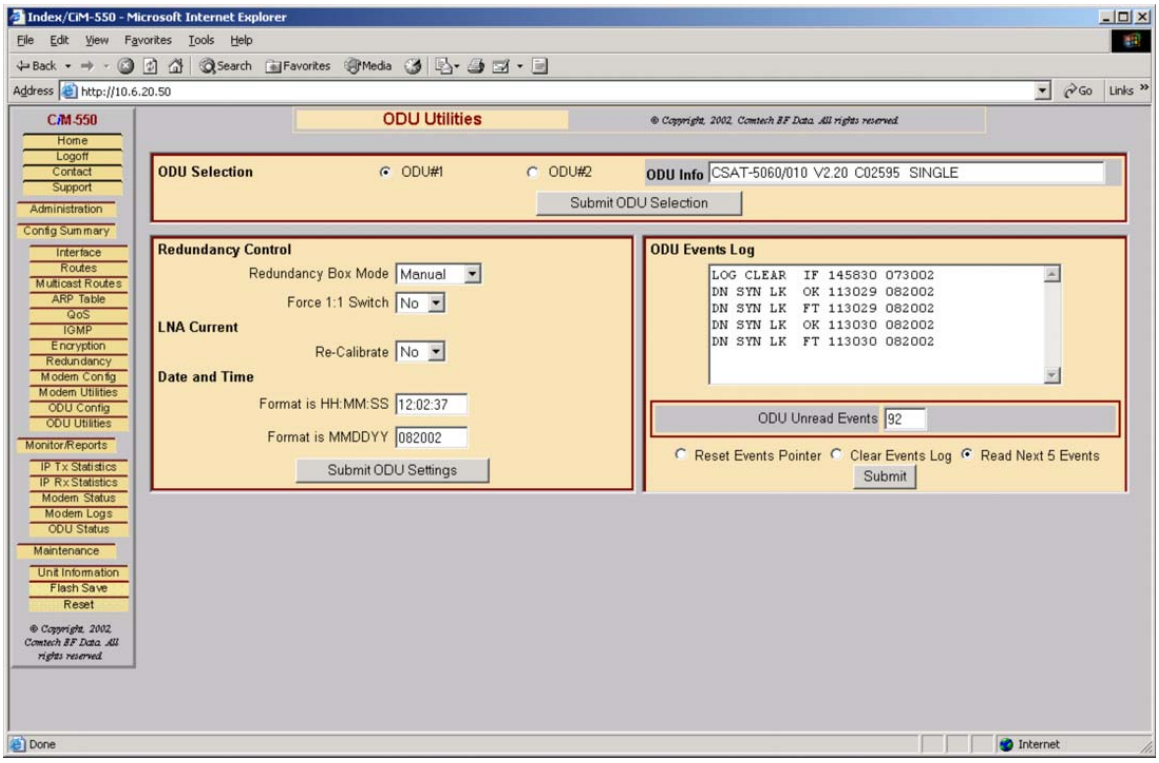
Also provided on this page is the capability to re-center the modem's buffer as well as force a 1:1 redundancy.

12.3.6.11 ODU CONFIGURATION



Refer to associated ODU/LNA manual for setting options.

12.3.6.12 ODU UTILITIES



Refer to associated ODU manual for setting options.

12.3.7 MONITORING AND REPORTS

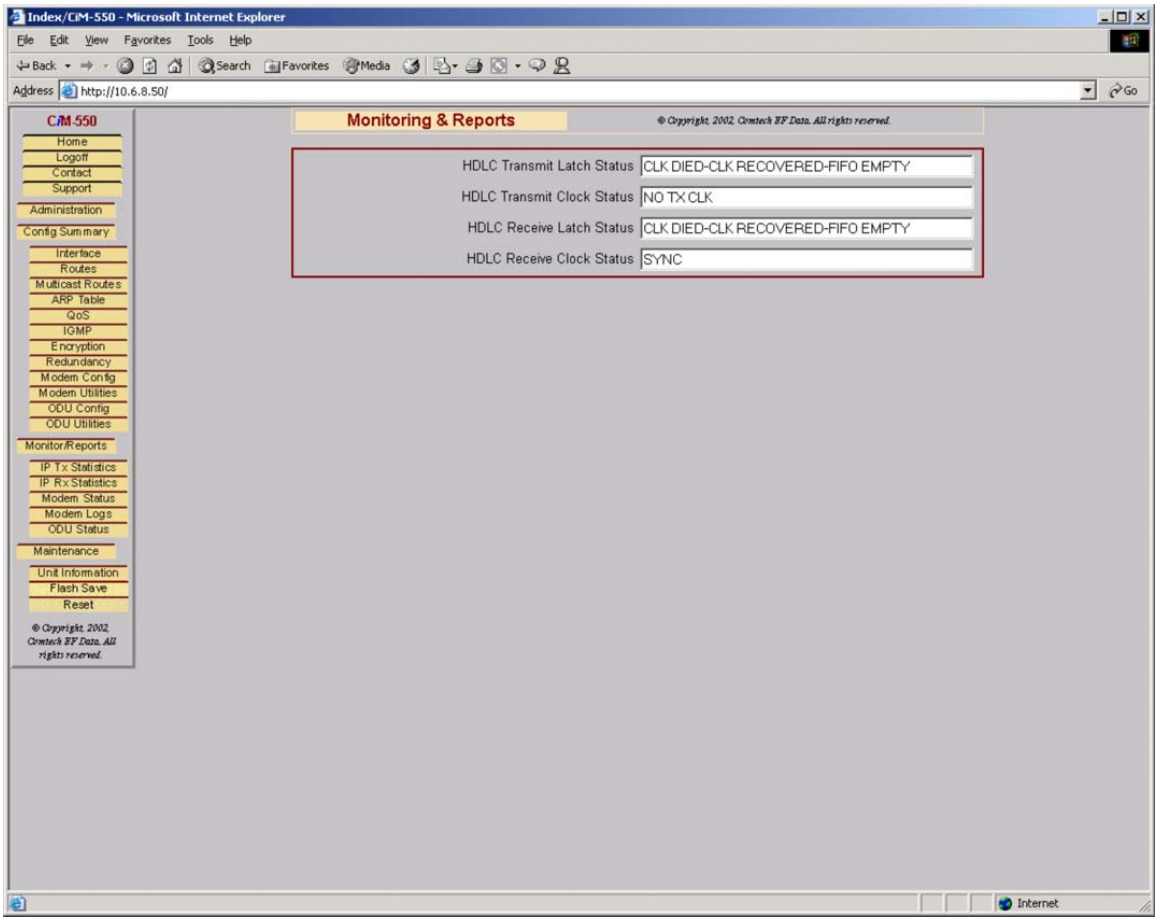
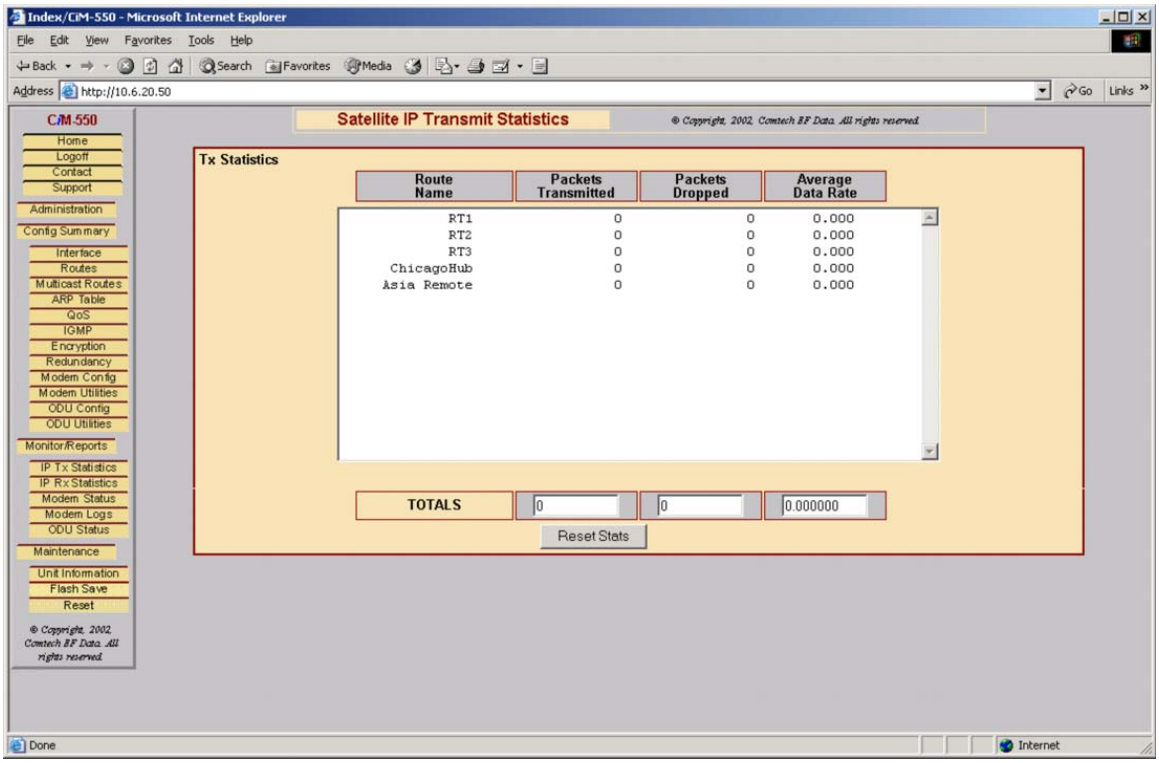


Table 12-11. Monitoring and Reports Fields

Field	Description
HDLC Transmit/Receive	The Latch and Clock settings report the current alarms and conditions of the CiM.

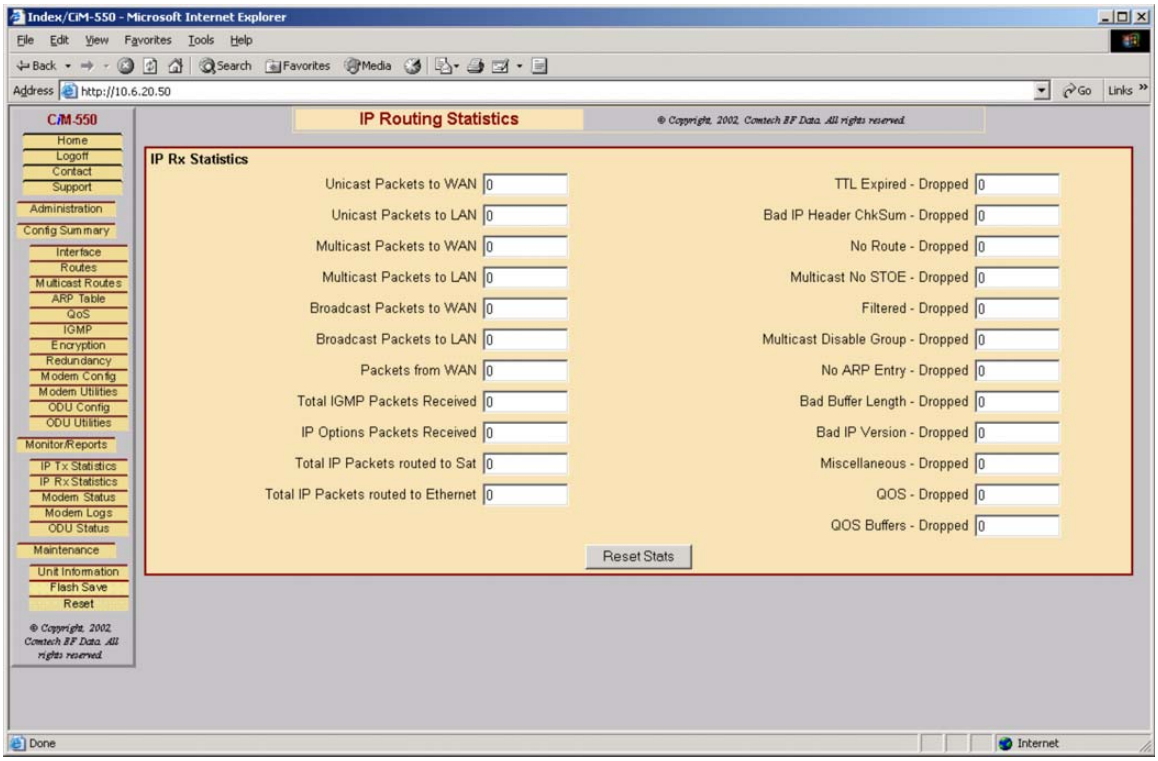
12.3.7.1 IP TX STATISTICS



This page displays the IP transmit statistics for each IP route.

Note: Refer to Section 11.2.7.2.1 CLI/Telnet Satellite Transmit Statistics for additional information.

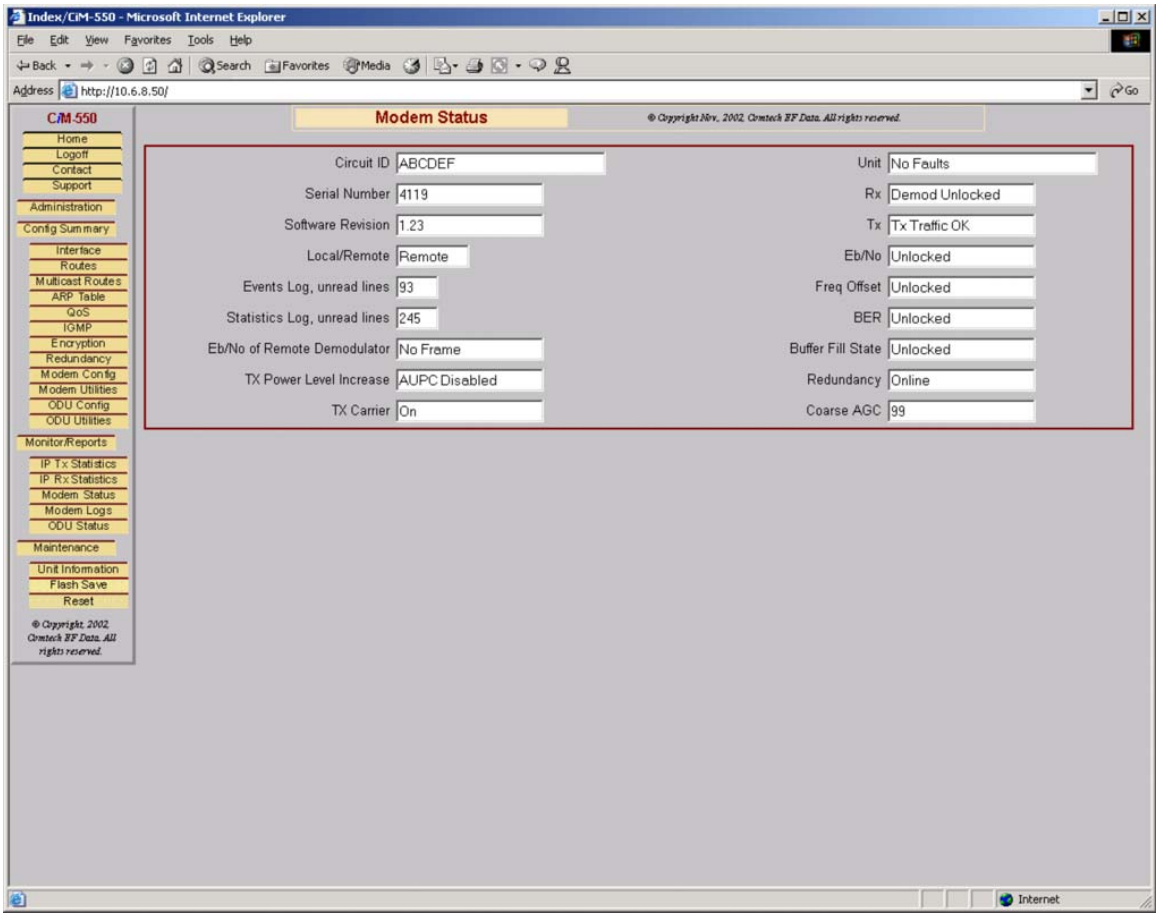
12.3.7.2 IP ROUTING STATISTICS



This page displays the receive IP Routing Statistics for the CiM.

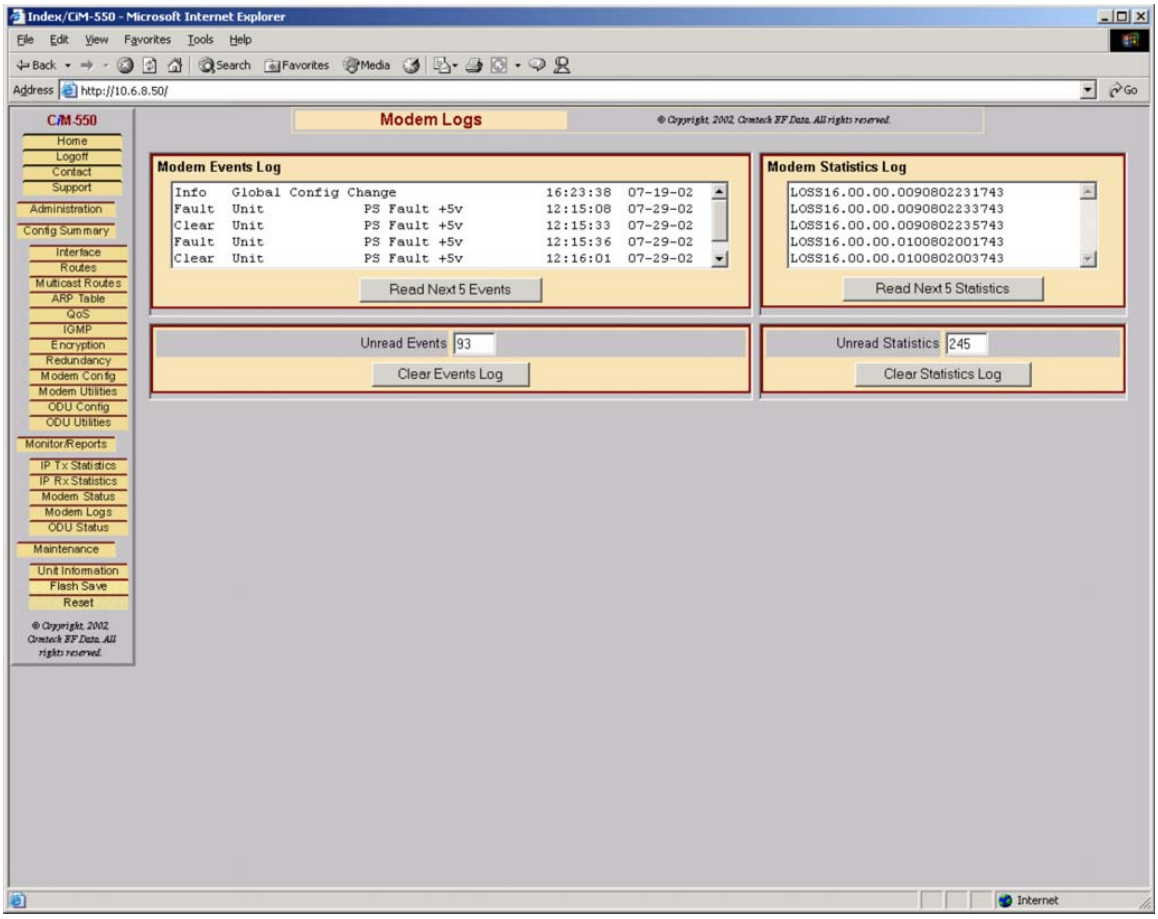
Note: Refer to Section 11.2.7.2.2 CLI/Telnet IP Routing Statistics for additional information.

12.3.7.3 MODEM STATUS



This page provides a read-only summary of various modem status parameters.

12.3.7.4 MODEM LOGS



Field	Description
Modem Events Log	Any occurance of a CiM modem fault will will be time stamped and recorded as an event. Similarly, the time of the fault condition clearing is also logged as an event. The event log can store up to 100 events. The Modem Event log window will display 5 events. I will also display the number of Unread Events and allow the user to Clear the Events Log.

Field	Description
Modem Statistics Log	The user may scroll backwards or forwards through the entries in the statistics log, using the UP/DOWN arrow keys. Pressing ENTER or CLEAR will take the user back to the previous menu. The event log can store up to 250 events. The top line of the display indicates the log entry number, and the time and date of the entry. Note that in accordance with international convention, the date is shown in DAY-MONTH-YEAR format. The bottom line of the display shows the statistics data which has been measured and recorded. The meaning and format of the numbers is as follows: Minimum Eb/No, Average Eb/No, Maximum TPLI, Average TPLI (where TPLI means Transmit Power Level increase, if AUPC is enabled). The user defines a measurement interval (see MONITOR, STATS, CONFIGURE) and during this interval, Eb/No and TPLI are observed, at a one second rate. At the end of this period, the average Eb/No is calculated and recorded, and the minimum value seen in the interval. Similarly, the average TPLI is calculated, along with the highest value seen in the interval. Notes: If the demod has lost lock during the measurement interval, the minimum Eb/No will show 'LOSS' rather than indicate a value. However, the average value (while the demod was locked) will still be calculated and shown. If, on the other hand, the demodulator has been unlocked for the entire measurement interval, the average Eb/No will also show 'LOSS'. (The display will show 'LOSS,LOSS'.) If the measured values are greater than, or equal to 16.0 dB, the display will show 16.0 dB. If AUPC is not enabled, the values of maximum and average TPLI will both show '0.0'. Examples: 08.0,13.5,2.5,1.8 means: Minimum Eb/No observed in the measurement interval = 8.0 dB Average Eb/No observed in the measurement interval = 13.5 dB Maximum TPLI observed in the measurement interval = 2.5 dB Average TPLI observed in the measurement interval = 1.8 dB LOSS,04.5,0.0,0.0 means: There was a loss of demod lock during the measurement interval Average Eb/No observed in the measurement interval = 4.5 dB Maximum TPLI observed in the measurement interval = 0 dB Average TPLI observed in the measurement interval = 0 dB (Which indicates no AUPC activity, or that AUPC is disabled.) If the user selects CLEAR, the statistics log is cleared.

The Modem Statistics logging interval can be configured from the CiM-550 front Panel. The User must first set the REMCONT to LOCAL. Then select MONITOR/ STATS/ CONFIGURE.The user is prompted to enter the logging interval (the period of time over which the statistics will be measured), using the UP/DOWN arrow keys, then press ENTER. Setting this to a value of 00 disables the feature (no logging).

The user can choose 10, 20, 30, 40, 50, 60, 70, 80, or 90 minutes.

```
LOGGING INTERVAL:90 MINS
(SET 00 TO DISABLE)(ENT)
```

If AUPC is selected, and the modem is not in Framed mode, the following sub-menu is displayed:

(MONITOR) AUPC

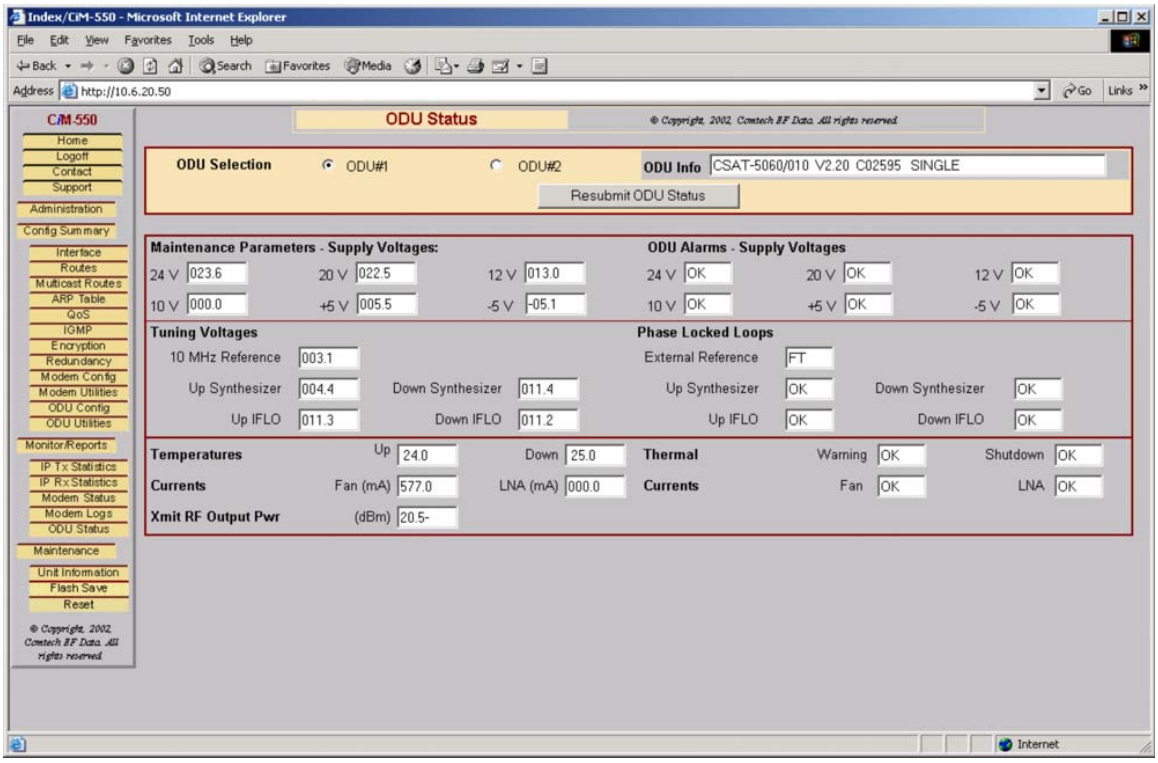
```
FRAMING NOT ENABLED!
(PRESS ENTER)
```

If AUPC is selected, and the modem is in Framed mode, the following sub-menu is displayed:

```
AUPC: REMOTE EbNo=14.0dB
TX POWER INCREASE=2.2dB
```

The top line displays the value of Eb/No of the demodulator at the distant end of the satellite link. The Eb/No will display UNLOCK if the remote demod is unlocked. The bottom line shows how much the AUPC system has increased the output power. If AUPC is not enabled, the value of TX POWER INCREASE will show as 0.0 dB.

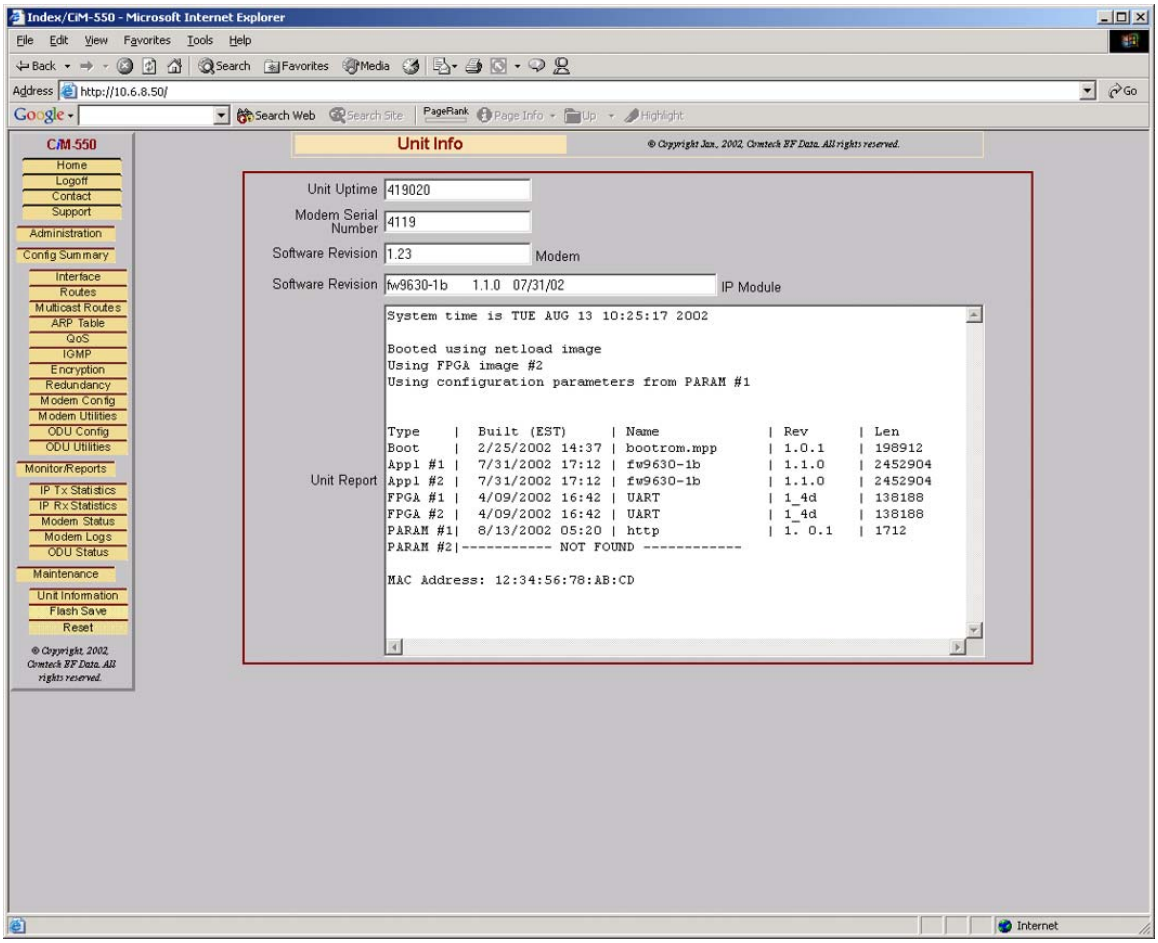
12.3.7.5 ODU STATUS



This page provides a read-only summary of various ODU status parameters.

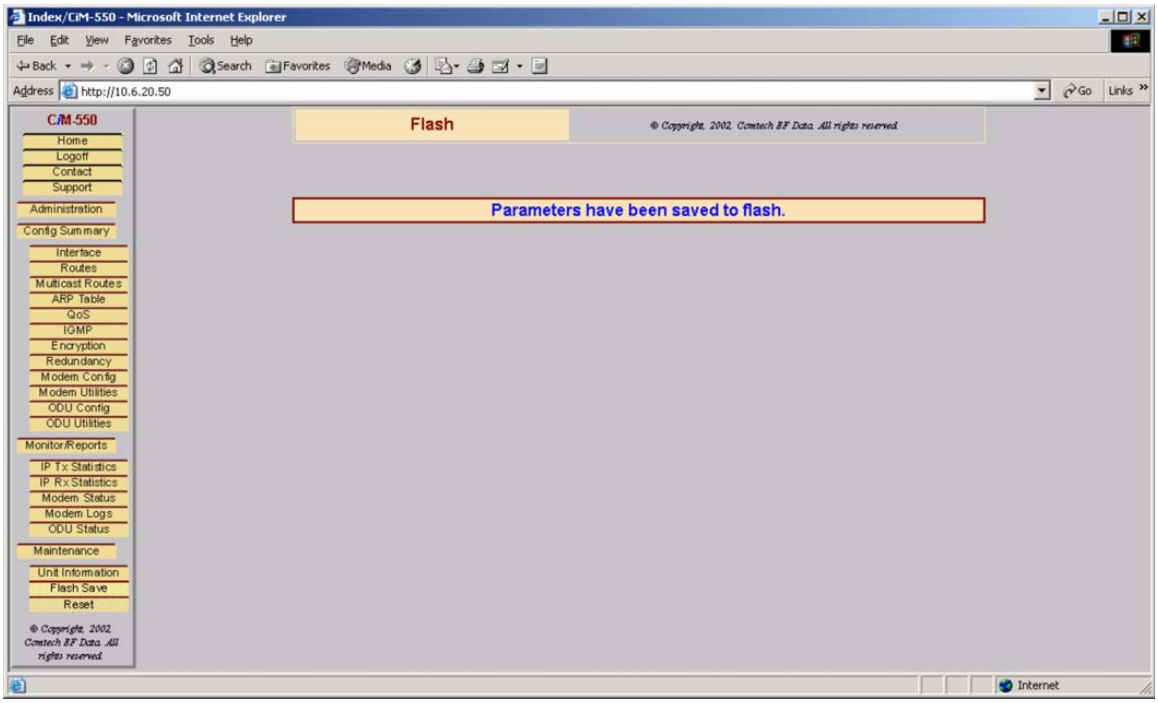
12.3.8 MAINTENANCE

12.3.8.1 UNIT INFORMATION



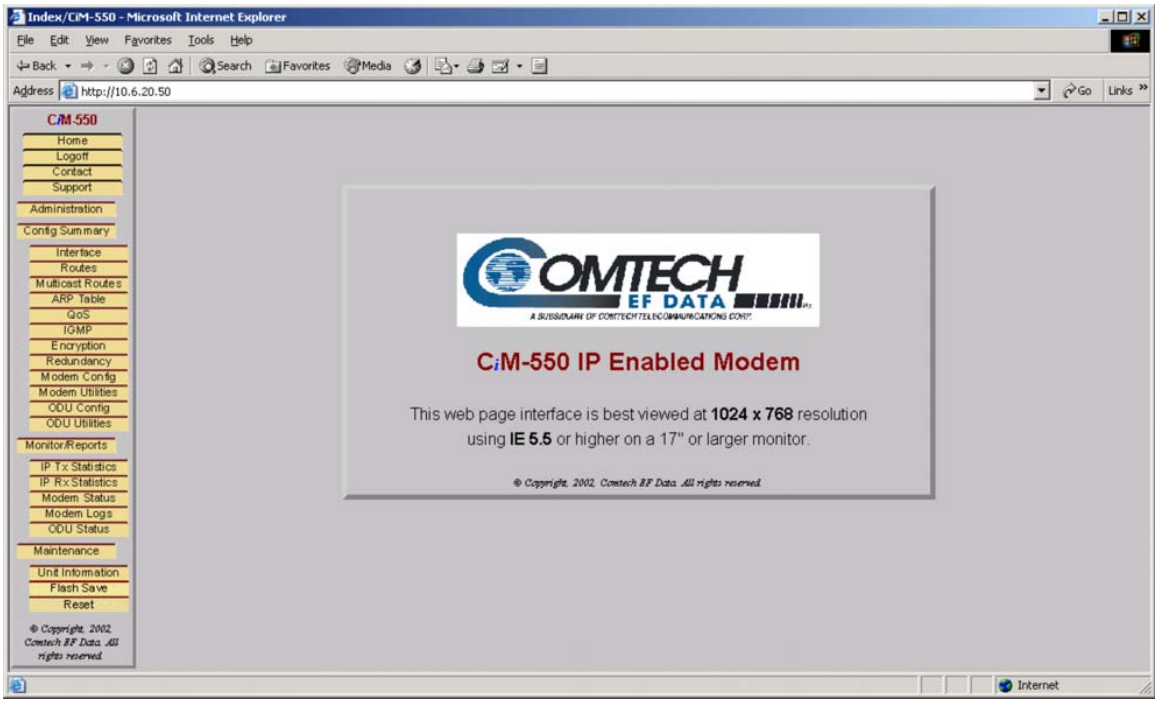
This screen displays the modems uptime, in seconds, serial number and software revision.

12.3.8.2 FLASH SAVE



When changes are made to the CiM protocol system, the Flash Save option must be selected in order for these settings to be valid through a power cycle. Without using this option, settings will revert back to their previous states as indicated by the last time the flash was saved.

12.3.8.3 RESET



The last item on the left-hand menu is “Reset.” This options will force the internal CiM module to reboot.

Notes:
1. The main modem will NOT reboot.
2. There is no verification of the reboot, other than the web-interface timing out due to the reboot time of the CiM modile.

NOTES:

Chapter 13. SNMP Interface

13.1 SNMP INTERFACE

The *Simple Network Management Protocol* (SNMP) is an application-layer protocol designed to facilitate the exchange of management information between network devices. The CiM-550 SNMP agent supports both SNMPv1 and v2c.

13.2 MIB-II

The CiM-550 agent implements RFC 1213, Management Information Base for Network Management of TCP/IP-based Internets. This is known as “MIB-II support”. The agent implements the following Groups:

Table 13-1. MIB-II Support

Group	Commets
System Group	Mandatory for RFC1213
Interface	Mandatory for RFC1213
IP	Mandatory for RFC1213
ICMP	Mandatory for RFC1213
TCP	Mandatory for RFC1213
UDP	Mandatory for RFC1213
SNMP	Mandatory for RFC1213
Address Translation Group	Implemented but depreciated in MIB-II
EGP	Not applicable

13.2.1 SYSTEM GROUP

This System Group provides information about the following items:

Table 13-2. System Group

OID	Defaults Value
sysDescr	CiM-550 IP Enabled Modem
sysObjectID	1.3.6.1.4.1.6247.5
sysContact	cimfss@comtechefdata.com
sysName	CIM550
sysLocation	Empty
sysServices	79

The system services provided by the cim550 in the OSI network model are:

$\sum 2^{L-1}$ where L is the network layer support by the cim550.

In the cim550, this is calculated by 2^{1-1} (layer 1) + 2^{2-1} (layer 2) + 2^{3-1} (layer 3) + 2^{4-1} (layer 4) + 2^{7-1} (layer 7) = 1 + 2 + 4 + 8 + 64 = 79.

Table 13-3. System Services

Network Layer	**Description**
Layer 1	Physical
Layer 2	Datalink
Layer 3	Internet
Layer 4	End-to-end
Layer 7	Applications

13.2.2 INTERFACE GROUP

This group provides the number of interfaces on a managed device and a table describing all interfaces.

The **ifNumber** OID is the number of network interfaces present on this system. On a cim550 the ifNumber should be 3 corresponding to the Ethernet, Satellite, and Loopback interfaces.

13.2.2.1 THE INTERFACES TABLE

Table 13-4. Interfaces Table OIDs

OID	Description
ifIndex	Unique value for each interface. The cim550 gives the Ethernet, Satellite, and Loopback interfaces a value of 1, 2, or 3.
ifDescr	Textual string containing information about the interface. The Ethernet interface is “fei0”. The Loopback interface is “lo0”. The Satellite interface is “hdl1”.
ifType	Link protocol for the interface. The Ethernet interface is set to ethernet-csmacd(6). The Loopback interface is set to softwareLoopback(24). The Satellite Interface is propPointToPointSerial(22).
ifMtu	Size of the largest datagram which can be sent/received on the interface, specified in octets. For the Ethernet and Satellite Interfaces, the MTU is 1500.
ifSpeed	Estimate of the interface's current bandwidth in bits per second. The Ethernet Interface can be set to ether 100000000 (100 Mbps) or 10000000 (10 Mbps). If the Ethernet driver is set to “Auto” then 100000000 will be returned. The Satellite Interface’s ifSpeed corresponds to the data rate of the transmitter only. The transmitter’s ifSpeed can range from 2400 (2.4 Kbps) to 2048000 (2.048 Mbps). If the cim550 is a Demod-Only then ifSpeed will be zero.
ifPhyAddress	Interface's address at the datalink layer. For the Ethernet Interface this corresponds to the MAC address (6 bytes). For the Satellite and Loopback Interface this value is undefined.
ifAdminSate	Desired state of the interface. For the cim550, the interfaces cannot be changed from an up(1) status.
ifOperState	Current operational state of the interface. For the cim550, the interfaces will remain in an up(1) status.
ifLastChange	Value of sysUpTime at the time the interface entered its current operational state. For the cim550, this will remain zero, corresponding to boot time.
ifInOctets	Total number of octets received on the interface. This statistic is counted for both the Ethernet and Satellite interfaces.

OID	Description
ifInUcastPkts	Number of subnetwork-unicast packets received on the interface. This statistic is counted for both the Ethernet and Satellite interfaces.
ifInNUcastPkts	Number of non-unicast (i.e. broadcast or multicast) packets received on the interface. This statistic is counted for both the Ethernet and Satellite interfaces.
ifInDiscards	Number of inbound packets which were chosen to be discarded even though no errors had been detected. This statistic is not counted.
ifInErrors	Number of inbound packets that contained errors. This statistic not counted.
ifInUnknownProtos	Number of packets received via the interface which were discarded because of an unknown or unsupported protocol. This statistic is counted for the Ethernet interface only.
ifOutOctets	Total number of octets transmitted out of the interface. This statistic is counted for both the Ethernet and Satellite interfaces.
ifOutUcastPkts	Total number of packets transmitted to a unicast address. This statistic is counted for both the Ethernet and Satellite interfaces.
ifOutNUcastPkts	Total number of packets that were transmitted to a non-unicast (i.e. a broadcast or multicast) address. This statistic is counted for both the Ethernet and Satellite interfaces.
ifOutDiscards	Number of outbound packets which were chosen to be discarded even though no errors had been detected. This statistic is not counted.
ifOutErrors	Number of outbound packets that could not be transmitted because of errors. This statistic is not counted.
IfOutQLen	Length of the output packet queue (in packets). This statistic is not reported.
ifSpecific	This OID is not used.

13.2.2.2 AT GROUP

This group contains a table that permits mappings from network addresses (i.e. IP addresses) to physical addresses (i.e. MAC addresses). This group is depreciated.

13.2.2.3 THE ADDRESS TRANSLATION TABLE

Table 13-5. Address Translation Table OIDs

OID	Description
atIfIndex	Interface on which this entry's translation is effective.
atPhysAddress	Media-dependent physical address.
atNetAddress	Network address (i.e. the IP address) corresponding to the media-dependent physical address.

13.2.2.4 IP GROUP

This group contains information regarding managing of the IP protocol. It contains three tables.

1. **IP Address Table** — Contains the IiM's IP addressing information.
2. **IP Routing Table** — Contains an entry for each route presently known to the cim550.
3. **IP Net To Media Table** — Address translation table for the IP group (providing identical functionality to the now deprecated "atTable" in the Address Translation group).

Table 13-6. IPGroup OIDs

OID	Description
ipForwarding	Indicates whether this entity is acting as an IP gateway in respect to the forwarding of datagrams. For the cim550, forwarding(1) is always turned on.
ipDefaultTTL	Default value inserted into the Time-To-Live field of the IP header of datagrams originated by the cim550. The value TTL is set to 64.
ipInReceives	Total number of input datagrams received from cim's Ethernet and Satellite interfaces, including those received in error.
ipInHdrErrors	Number of input datagrams discarded due to errors in their IP headers.
ipInAddrErrors	Number of input datagrams discarded because the IP address in their IP header's destination field was not a valid address to be received at this entity.

OID	Description
ipForwDatagrams	Number of input datagrams for which the cim550 was not their final IP destination, because of which an attempt was made to find a route to forward them to that final destination.
ipInUnknownProtos	Number of locally-addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.
ipInDiscards	Number of input IP datagrams for which no problems were encountered to prevent their continued processing, but which were discarded.
ipInDelivers	Total number of input datagrams successfully delivered to IP user-protocols.
ipOutRequests	Total number of IP datagrams which local IP user-protocols supplied to IP in requests for transmission. Note that this counter does not include any datagrams counted in ipForwDatagrams.
ipOutDiscards	Number of output IP datagrams for which no problem was encountered to prevent their transmission to their destination, but which were discarded.
ipOutNoRoutes	Number of IP datagrams discarded because no route could be found to transmit them to their destination.
ipReasmTimeout	Maximum number of seconds which received fragments are held while they are awaiting reassembly at this entity
ipReasmReqds	Number of IP fragments received which needed to be reassembled at this entity.
ipReasmOKs	Number of IP datagrams successfully re-assembled.
ipReasmFails	Number of failures detected by the IP re-assembly algorithm (for whatever reason: timed out, errors, etc…).
ipFragOKs	Number of IP datagrams that have been successfully fragmented at this entity.
ipFragFails	Number of IP datagrams that have been discarded because they needed to be fragmented at this entity but could not be, (e.g., because their “Don't Fragment” flag was set).
ipFragCreates	Number of IP datagram fragments that have been generated as a result of fragmentation at this entity.

13.2.2.5 THE IP ADDRESS TABLE

The IP address table contains the cim550's IP addressing information.

Table 13-7. IPAddress Table OIDs

OID	Description
ipAdEntIfIndex	CIM-550's Interface index value (ifIndex) which uniquely identifies the interface to which the IP address is applicable.
ipAdEntNetMask	Subnet mask associated with the IP address of this entry. The value of the mask is an IP address with all the network bits set to 1 and all the hosts bits set to 0.
ipAdEntBcastAddr	Value of the least-significant bit in the IP broadcast address used for sending datagrams on the interface associated with the IP address of this entry. For example, when the Internet standard all-ones broadcast address is used, the value will be 1. This value applies to both the subnet and network broadcasts addresses used by the entity on this interface.
ipAdEntReasmMaxSize	Size of the largest IP datagram which this entity can re-assemble from incoming IP fragmented datagrams received on this interface.

13.2.2.6 THE IP ROUTING TABLE

The IP routing table contains an entry for each route presently known to the cim550.

Table 13-8. IP Routing Table OIDs

OID	Description
ipRouteDest	Destination IP address of this route. An entry with a value of 0.0.0.0 is considered a default route.
ipRouteIfIndex	Index value (ifIndex) which uniquely identifies the local interface through which the next hop of this route should be reached.
ipRouteMetric1	Primary routing metric for this route. User defined routes have a value of 1. All others “automatically” defined routes have a value of zero.
ipRouteMetric2	Not used and its value is -1.
ipRouteMetric3	Not used and its value is -1.
ipRouteMetric4	Not used and its value is -1.
ipRouteNextHop	IP address of the next hop of this route.
ipRouteType	Type of route. A value of direct(3) is used when the destination is connected to the local network. A value of indirect(4) is used when the destination is reached by routing to a non-local network.
ipRouteProto	Routing mechanism via which this route was learned. A value of local(2) means the route was entered manually. A value of netmgmt(3) means the route was set via a network management protocol. A value of icmp(4) means the route was obtained via ICMP. A value of other(1) is used for all other cases.
ipRouteAge	Number of seconds since this route was last updated.
ipRouteMask	Indicates the mask to be logical-ANDed with the destination address before being compared to the value in the ipRouteDest field. If the value of the ipRouteDest is 0.0.0.0 (a default route), then the mask value is also 0.0.0.0.
ipRouteMetric5	Not used and its value is -1.
ipRouteInfo	Not used and is set to the null-OID.

13.2.2.7 THE ADDRESS TRANSLATION TABLE

The ipNetToMediaTable is the IP Address Translation table used for mapping from IP addresses to physical addresses. Each entry contains one IP address to physical address equivalence.

Table 13-9. Address Translation Table OIDs

OID	Description
ipNetToMediaIfIndex	Interface on which this entry's equivalence is effective.
ipNetToMediaPhysAddress	Physical address.
ipNetToMediaNetAddress	IP address corresponding to the physical address.
ipNetToMediaType	Type of mapping. A value of dynamic(3) means that the entry was added by the ARP protocol. A value of static(4) means the entry was added by a user. A value of invalid(2) is used for an invalidated mapping and a value of other(1) is used when none of the previous values apply.

13.2.2.8 ADDITIONAL IP OBJECTS

The **ipRoutingDiscards** OID is the number of routing entries which were chosen to be discarded even though they are valid.

13.2.3 ICMP GROUP

This group contains the Internet Control Message Protocol (ICMP) input and output statistics. ICMP messages are used for out-of-band messages related to network operation.

Table 13-10. IP Routing Table OIDs

OID	Description
icmpInMsgs	Total number of ICMP messages which the entity received.
icmpInErrors	Number of ICMP messages which the entity received but determined as having ICMP-specific errors (bad ICMP checksums, bad length, etc…).
icmpInDestUnreachs	Number of ICMP Destination Unreachable messages received.
icmpInTimeExcds	Number of ICMP Time Exceeded messages received.
icmpInParmProbs	Number of ICMP Parameter Problem messages received.
icmpInSrcQuenchs	Number of ICMP Source Quench messages received.
icmpInRedirects	Number of ICMP Redirect messages received.
icmpInEchos	Number of ICMP Echo (request) messages received.
icmpInEchoReps	Number of ICMP Echo Reply messages received.
icmpInTimestamps	Number of ICMP Timestamp (request) messages received.
icmpInTimestampReps	Number of ICMP Timestamp Reply messages received.
icmpInAddrMasks	Number of ICMP Address Mask Request messages received.
icmpInAddrMaskReps	Number of ICMP Address Mask Reply messages received.
icmpOutMsgs	Total number of ICMP messages which this entity attempted to send.
icmpOutErrors	Number of ICMP messages which this entity did not send due to problems discovered within ICMP such as a lack of buffers.
icmpOutDestUnreachs	Number of ICMP Destination Unreachable messages sent.
icmpOutTimeExcds	Number of ICMP Time Exceeded messages sent.
icmpOutParmProbs	Number of ICMP Parameter Problem messages sent.
icmpOutSrcQuenchs	Number of ICMP Source Quench messages sent.
icmpOutRedirects	Number of ICMP Redirect messages sent.
icmpOutEchos	Number of ICMP Echo (request) messages sent.
icmpOutEchoReps	Number of ICMP Echo Reply messages sent.
icmpOutTimestamps	Number of ICMP Timestamp (request) messages sent.
icmpOutTimestampReps	Number of ICMP Timestamp Reply messages sent.
icmpOutAddrMasks	Number of ICMP Address Mask Request messages sent.
icmpOutAddrMaskReps	Number of ICMP Address Mask Reply messages sent.

13.2.4 TCP GROUP

This group contains statistics and control parameters for the TCP protocol. This group contains a table describing the current TCP connections.

Note: The instances of object types that represent information about a particular TCP connection are transient; they persist only as long as the connection in question.

Table 13-11. TCP Group OIDs

OID	Description
tcpRtoAlgorithm	Algorithm used to determine the timeout value used for retransmitting unacknowledged octets. The cim550 uses Van Jacobson's algorithm.
tcpRtoMin	Minimum value permitted by a TCP implementation for the retransmission timeout. The cim550 uses a minimum timeout of 1000 milliseconds.
tcpRtoMax	Maximum value permitted by a TCP implementation for the retransmission timeout. The cim550 uses a maximum timeout of 64000 milliseconds.
tcpMaxConn	Limit on the total number of TCP connections the entity can support. In the cim550, the maximum number of connections is dynamic so a value of –1 is returned.
tcpActiveOpens	Number of times TCP connections have made a direct transition to the SYN-SENT state from the CLOSED state.
tcpPassiveOpens	Number of times TCP connections have made a direct transition to the SYN-RCVD state from the LISTEN state.
tcpAttemptFails	Number of times TCP connections have made a direct transition to the CLOSED state from either the SYN-SENT state or the SYN-RCVD state, plus the number of times TCP connections have made a direct transition to the LISTEN state from the SYN-RCVD state.
tcpEstabResets	Number of times TCP connections have made a direct transition to the CLOSED state from either the ESTABLISHED state or the CLOSE-WAIT state.
tcpCurrEstab	Number of TCP connections for which the current state is either ESTABLISHED or CLOSE-WAIT.
tcpInSegs	Total number of segments received.
tcpOutSegs	Total number of segments sent.
tcpRetransSegs	Total number of segments retransmitted – that is, the number of TCP segments transmitted containing one or more previously transmitted octets.

13.2.4.1 THE TCP CONNECTION TABLE

The tcpConnTable is a table containing TCP connection-specific information. Each row contains information about a particular current TCP connection. A row is transient, in that it ceases to exist when the connection makes the transition to the CLOSED state.

Table 13-12. TCP Connection Table OIDs

OID	Description
tcpConnLocalAddress	Local IP address for this TCP connection. In the case of a connection in the listen state which is willing to accept connections for any IP interface associated with the node, the value 0.0.0.0 is used.
tcpConnLocalPort	Local port number for this TCP connection.
tcpConnRemAddress	Remote IP address for this TCP connection.
tcpConnRemPort	Remote port number for this TCP connection.
tcpInErrs	Total number of segments received in error.
tcpOutRsts	Number of TCP segments sent containing the RST flag.

13.2.5 UDP GROUP

This group contains control parameters and statistics for the UDP protocol. This group contains a UDP table describing the UPD ports in use.

Table 13-13. UDP Group OIDs

OID	Description
udpInDatagrams	Total number of UDP datagrams delivered.
udpNoPorts	Total number of received UDP datagrams for which there was no application at the destination port.
udpInErrors	Number of received UDP datagrams that could not be delivered for reasons other than the lack of an application at the destination port.
udpOutDatagrams	Total number of UDP datagrams sent from this entity.

13.2.5.1 THE UDP LISTENER TABLE

The UDP listener table contains information about this entity's UDP end-points on which a local application is currently accepting datagrams. A row contains information about a particular current UDP listener.

Table 13-14. UDP Listener Table OIDs

OID	Description
udpLocalAddress	Local IP address for this UDP listener. In the case of a UDP listener which is willing to accept datagrams for any IP interface associated with the node, the value 0.0.0.0 is used.
udpLocalPort	Local port number for this UDP listener.

13.2.6 EGP GROUP

This group is not implemented in the agent.

13.2.7 TRANSMISSION GROUP

This group is not implemented in the agent.

13.2.8 SNMP GROUP

This group provides statistical information regarding the SNMP Protocol.

Table 13-15. SNMP Group OIDs

OID	Description
snmpInPkts	Total number of Messages delivered to the SNMP entity from the transport service.
snmpOutPkts	Total number of SNMP Messages which were passed from the SNMP agent to the transport service.
snmpInBadVersions	Total number of SNMP Messages which were delivered to the SNMP agent and were for an unsupported SNMP version.
snmpInBadCommunityNames	Total number of SNMP Messages delivered to the SNMP agent which used a SNMP community name not known to the agent.
snmpInBadCommunityUses	Total number of SNMP Messages delivered to the SNMP agent which represented an SNMP operation which was not allowed by the SNMP community named in the Message.
snmpInASNParseErrs	Total number of ASN.1 or BER errors encountered by the SNMP agent when decoding received SNMP Messages.
snmpInTooBigs	Total number of SNMP PDUs which were delivered to the SNMP agent and for which the value of the error-status field is “tooBig”.
snmpInNoSuchNames	Total number of SNMP PDUs which were delivered to the SNMP agent and for which the value of the error-status field is “noSuchName”.
snmpInBadValues	Total number of SNMP PDUs which were delivered to the SNMP agent and for which the value of the error-status field is “badValue".
snmpInReadOnlys	Total number valid SNMP PDUs which were delivered to the SNMP agent and for which the value of the error-status field is “readOnly”.
snmpInGenErrs	Total number of SNMP PDUs which were delivered to the SNMP agent and for which the value of the error-status field is “genErr".
snmpInTotalReqVars	Total number of MIB objects which have been retrieved successfully by the SNMP agent as the result of receiving valid SNMP Get-Request and Get-Next PDUs.

OID	Description
snmpInTotalSetVars	Total number of MIB objects which have been altered successfully by the SNMP agent as the result of receiving valid SNMP Set-Request PDUs.
snmpInGetRequests	Total number of SNMP Get-Request PDUs which have been accepted and processed by the SNMP agent.
snmpInGetNexts	Total number of SNMP Get-Next PDUs which have been accepted and processed by the SNMP agent.
snmpInSetRequests	Total number of SNMP Set-Request PDUs which have been accepted and processed by the SNMP agent.
snmpInGetResponses	Total number of SNMP Get-Response PDUs which have been accepted and processed by the SNMP agent.
snmpInTraps	Total number of SNMP Trap PDUs which have been accepted and processed by the SNMP agent.
snmpOutTooBigs	Total number of SNMP PDUs which were generated by the SNMP agent and for which the value of the error-status field is “tooBig".
snmpOutNoSuchNames	Total number of SNMP PDUs which were generated by the SNMP agent and for which the value of the error-status is “noSuchName”.
snmpOutBadValues	Total number of SNMP PDUs which were generated by the SNMP agent and for which the value of the error-status field is “badValue".
snmpOutGenErrs	Total number of SNMP PDUs which were generated by the SNMP agent and for which the value of the error-status field is “genErr".
snmpOutGetRequests	Total number of SNMP Get-Request PDUs which have been generated by the SNMP agent.
snmpOutGetNexts	Total number of SNMP Get-Next PDUs which have been generated by the SNMP agent.
snmpOutSetRequests	Total number of SNMP Set-Request PDUs which have been generated by the SNMP agent.
snmpOutGetResponses	Total number of SNMP Get-Response PDUs which have been generated by the SNMP agent.
snmpOutTrap	Total number of SNMP Trap PDUs which have been generated by the SNMP agent.
snmpEnableAuthenTraps	Indicates whether the SNMP agent process is permitted to generate authentication-failure traps.

13.3 PRIVATE MIB IMPLEMENTATIONS

The agent also implements two private MIBs for the CiM-550. The CiM IP Controller MIB (cimController) holds all the security, feature selection, and IP related parameters and the CiM-550 modem MIB (cim550) which contains all the modem specific parameters.

13.4 CIM IP CONTROLLER PRIVATE MIB

13.4.1 CIM ADMINISTRATION GROUP

This group contains system security, administration, and feature configuration parameters.

The “cimMibVersion” OID contains the current version of the CIM IP Controller MIB. The current version number is 3.

13.4.1.1 CIM NAME PASSWORD CONFIG SUBGROUP

The Password subgroup contains the user names and passwords for three user types: Admin User, Read/Write User, and Read Only user. Only the Admin User can do GETS or SETS to the Security part of the MIB.

Table 13-16. CiM Name Password Config Subgroup OIDs

OID	Description
cimAdminName	Administrator’s user name and must be between 1 and 16 characters.
cimAdminPassword	Administrator’s password and must be between 1 and 16 characters.
cimReadWriteName	Read/Write operator’s user name and must be between 1 and 16 characters.
cimReadWritePassword	Read/Write operator’s password and must be between 1 and 16 characters.
cimReadOnlyName	Read-Only operator’s user name and must be between 1 and 16 characters.
cimReadOnlyPassword	Read-Only operator’s password and must be between 1 and 16 characters.

13.4.1.2 CiM Access Lists Subgroup

The Access Client List allows an operator to define which remote clients can connect to a CiM-550 when the Access List Enforcement is enabled. Each entry allows an operator to specify an IP address and a subnet mask to define a unique class of clients that are allowed access to the CiM-550.

Table 13-17. CiM Access Lists Subgroup OIDs

OID	Description
cimAccessIpAddress1	Defines an access IP address.
cimAccessSubnetMaskLen1	Defines the subnet mask length of the corresponding IP address.
cimAccessIpAddress2	Defines an access IP address.
cimAccessSubnetMaskLen2	Defines the subnet mask length of the corresponding IP address.
cimAccessIpAddress3	Defines an access IP address.
cimAccessSubnetMaskLen3	Defines the subnet mask length of the corresponding IP address.
cimAccessIpAddress4	Defines an access IP address.
cimAccessSubnetMask4	Defines the subnet mask length of the corresponding IP address.
cimAccessListEnforcement	Enables/disables the access list by setting it to 1 (yes) or 0 (no).

Be sure that you have added the SNMP browser's/manager's IP Address to the access list before enabling access list filtering. Otherwise, the SNMP browser/manager will no longer be able to gain access to the CiM.

13.4.1.3 FEATURES AVAILABILITY SUBGROUP

This subgroup tells if a feature is available or unavailable in the CiM-550. The currently supported FAST features are QOS, IGMP, and Encryption. These features must be purchased as additional options. The Datagram Compression, NAPT, TCP Acceleration, Transparent Bridging, and Header Compression features are not yet supported but will be made available in a follow on release.

Table 13-18. FAST Features

FAST Feature	Status
QOS Option	Supported
IGMP Option	Supported
Encryption Option	Supported
Header Compression Option	Not Supported
TCP Acceleration Option	Not Supported
Datagram Compression Option	Not Supported
NAPT Option	Not Supported
Transparent Bridging Option	Not Supported

13.4.1.4 FEATURES SUBGROUP

This subgroup allows an operator to enable/disable a feature. Standard features that are supported (telnet, ping response, and multicast routing) can be enabled or disabled by sending a 1 (enable) or 0 (disable). The Midas Operations Feature is always enabled and cannot be disabled.

FAST Features that have been purchased and are Available in the Feature Availability Group can be enabled or disabled by an operator. Not yet purchased or not yet supported FAST Features will remain disabled.

Table 13-19. Features Subgroup

Feature	Type	Status
Telnet Feature	Standard	Supported
Ping Response Feature	Standard	Supported
Multicast Routing Feature	Standard	Supported
Midas Feature	Standard	Supported
QOS Option	FAST	Supported
IGMP Option	FAST	Supported
Transmit DES Encryption Option	FAST	Supported
Receive DES Encryption Option	FAST	Supported
Header Compression Option	FAST	Not Supported
TCP Acceleration Option	FAST	Not Supported
Datagram Compression Option	FAST	Not Supported
NAPT Option	FAST	Not Supported
Transparent Bridging Option	FAST	Not Supported

13.4.1.5 ENCRYPTION SUBGROUP

Note: This subgroup will only be accessible in the MIB tree if the Encryption FAST feature has been purchased and the license key has been entered through the modem's front panel. Otherwise, both GETS and SETS on these OIDs will return errors.

This subgroup controls the parameters for the DES feature.

Table 13-20. Encryption Subgroup OIDs

OID	Description
cimTransmitEncryptEnabled	Enables/disables encryption on the transmit side.
cimReceiveDecryptEnabled	Enables/disables encryption on the receive side.
cimTransmitKey1	Allows the operator to specify the value of Key1 used to encrypt packets transmitted to the sattelite.
cimTransmitKey2	Allows the operator to specify the value of Key2 used to encrypt transmitted packets transmitted to the sattelite.
cimReceiveKey1	Allows the operator to specify the value of Key1 used to decrypt traffic being received from the Satellite Interface.
cimReceiveKey2	Allows the operator to specify the value of Key2 used to decrypt traffic being received from the Satellite Interface.

13.4.1.6 CIM SMTP

The cimSmtp subsection sets up the cim550 to use a SMTP mail server to send a problem report back to CiM Support. Along with the problem report, the cim550 sends the equipment serial number and configuration, which is attached to the email message. By default, the problem report is sent to cimfss@comtechefdata.com. In order for this to work, the user is required to enter the IP address of their outgoing SMTP mail server and the domain name for that server.

Table 13-21. CIM SMTP OIDs

OID	Description
cimSmtpServerIpAddress	Specifics user's outgoing SMTP server's IP address.
cimSmtpDomain	Specifics the SMTP Domain of the mail server.
cimSmtpDestinationName	Specifies the SMTP destination user name.

13.4.1.7 CiM SNMP Community Names

The CiM-550 uses community strings as a password scheme that provides authentication before gaining access to the CiM-550 agent's MIBs.

In SNMP v1/v2c, the community string is sent unencrypted in the SNMP packets. Caution must be taken by the network administrator to ensure that SNMP packets travel only over a secure and private network if security is a concern. A packet sniffer can easily obtain the community string by viewing the SNMP traffic on the network.

The community string is entered into the MIB Browser or Network Node Management software and is used to authenticate users and determine access privileges to the SNMP agent. The community string should match the concatenated user name and password. For example, if the user name is "comtech" and the password is "donttell" then the community string should be "comtechdonttell".

Community strings are used to set up a three-tiered security scheme in the CiM-550. The CiM-550 provides for three types of users in the system: an Admin User, a Read/Write User, and a Read Only User. These users mirror those found in the CLI Name/Password Configuration screen. The Admin User has read and write access to all parameters in all standard and private MIBs. The Read/Write User has read and write access to all parameters in the standard and private MIBs, except for the cimUnitAdmin Group in the cimController MIB. The Read Only User has access to only read parameters from the standard MIBs and the private CiM-550 MIB. The Read Only User cannot do any reads (GETS) in the private CiM-550 IP Controller MIB.

Table 13-22. CiM SNMP Community Names

User Name	MIB-II	IP Controller MIB	CiM-550 MIB
Admin User	Read/Write	Read/Write	Read/Write
Read/Write User	Read/Write	Read/Write (not Administration)	Read/Write
Read Only User	Read	No access	Read

13.4.1.8 CiM SNMP Traps

The cim550 has the ability to send out SNMP traps when certain events occur in the modem. For example, when the cim550 boots it sends out a coldstart trap and 3 linkup traps, one for each interface that is brought up. The cim550 also sends out traps when an alarm or a fault occurs in the modem. These include unit faults, TX faults, and RX faults. A trap is sent both when a fault occurs and is cleared.

The cim550 supports both SNMPv1 traps and SNMPv2 notifications. Which style of traps the cim 550 sends can be configured by the user using the cimSnmpTrapVersion OID.

The following are the MIB2 v1traps/v2 notifications that the cim550 supports.

CiM550 MIB2 SNMPv1 traps:

Cold Start	1
Warm Start	2
Link Down	3
Link Up	4
Authentication Failure	5

CiM550 MIB2 SNMPv2 notifications:

Cold Start	1.3.6.1.6.3.1.1.5.1
Warm Start	1.3.6.1.6.3.1.1.5.2
Link Down	1.3.6.1.6.3.1.1.5.3
Link Up	1.3.6.1.6.3.1.1.5.4
Authentication Failure	1.3.6.1.6.3.1.1.5.5

The following tables are the Alarms and Faults v1 traps / v2 notifications that the cim550 supports.

CiM550 Alarms and Faults SNMPv1 traps:

cim550ModemUnitFaultsTrap	624751
cim550ModemTxTrafficFaultsTrap	624752
cim550ModemRxTrafficFaultsTrap	624753

CiM550 Alarms and Faults SNMPv2 notifications:

cim550ModemUnitFaultsTrap	1.3.6.1.4.1.6247.5.1.9.0.624751
cim550ModemTxTrafficFaultsTrap	1.3.6.1.4.1.6247.5.1.9.0.624752
cim550ModemRxTrafficFaultsTrap	1.3.6.1.4.1.6247.5.1.9.0.624753

13.4.1.9 CIM SNMP TRAP CONFIGURATION

Table 13-23. CIM SNMP Trap COnfiguration OIDs

OID	Description
cimSnmpTrapDestinationIpAddress	Specifies where the trap should be sent to. This is usually the IP address of a network management application (such as HP Openview or Castlerock SNMPc). It could also be the IP address of a trap ringer console (such as MG-SOFT MIB Browser).
cimSnmpTrapCommunity	Community name that is sent with the trap. This community name is checked by the network management application or MIB browser to determine if it should accept or discard the trap being sent to it.
cimSnmpTrapVersion	Tells the agent if it should send out version 1 or version 2 traps. The trap formats differs depending on which version is used but contain the same type of information. The choice of which trap version to use should depend of which SNMP version the managing application is expecting. The OID can be sent to the following values: 1 SNMPv1 2 SNMPv2

13.4.2 INTERFACE GROUP

This Group controls the parameters of the modem's Ethernet and HDLC interfaces.

13.4.2.1 ETHERNET INTERFACE SUBGROUP

The subgroup defines the modem's Ethernet interface. These include parameters for setting the Ethernet speed, IP address, and IP address subnet prefix length.

Table 13-24. Ethernet Interface Subgroup OIDs

OID	Description
cimEthernetMacAddress	Defines the hardware MAC Address. This address is assigned permanently at the factory.
cimEthernetSpeed	Defines the Ethernet interface's mode and speed. It defaults to auto negotiate. The "cimEthernetSpeed" OID can be set using the following options:
cimEthernetIpAddress	IP address assigned to the Ethernet Interface.
cimEthernetSubnetPrefixLen	Specifies the subnet mask assigned to the Ethernet Interface. Valid subnet mask prefix length are between 8 and 30.

1	Auto
2	10 MB/sec Half Duplex
3	100 MB/sec Half Duplex
4	10 MB/sec Full Duplex
5	100 MB/sec Full Duplex

13.4.2.2 SATELLITE INTERFACE SUBGROUP

This subgroup defines the modem's Satellite interface.

Table 13-25. Satellite Ijnterface Subgroup OIDs

OID	Description
cimSatelliteIpAddress	Specifies the IP Address assigned to the Satellite Interface. The Satellite IP Address should be on the same subnet as the IP address assigned to the Satellite interface of the modem on the other side of the Satellite link and should not be on the same subnet as the Ethernet Interface.
cimSatelliteSubnetPrefixLen	Specifies the Subnet Mask length assigned to the Satellite Interface. Valid subnet mask prefix lengths are between 8 and 30.
cimSatelliteReceiveEnable	Controls the receiving and processing of packets from the Satellite Interface. If the OID is set to 1 (enabled) then the modem receives and processes packets from the Satellite Interface. If the OID is set to 0 (disabled), the CiM-550 discards packets from the Satellite Interface.
cimSatelliteTransmitEnable	Controls the sending of packets to the Satellite Interface. If the OID is set to 1 (enabled), the CiM-550 allows routing of packets from its Ethernet interface to its Satellite interface. If the OID is set to 0 (disabled), the CiM-550 will not route packets from its Ethernet interface to its Satellite interface.
cimSatelliteHdlcAddress1-4	Allows the operator to define up to four HDLC addresses for the Satellite Interface. The HDLC address are entered in decimal format and will be automatically converted to HEX format. For example, HDLC address 65534 (in decimal) will be converted to FFFE (in HEX).

13.4.2.3 ROUTE TABLE GROUP

Note: In order for the CiM-550 to properly pass packets over the satellite interface, the user MUST provide the appropriate IP to HDLC address mapping in the ARP table. Please see the *ARP Configuration Group* for more details.

Table 13-26. Route Table Group OIDs

OID	Description
cimGlobalQosEnable	Allows an operator to vie the status of the QOS feature (enabled/disabled).

The **cimIpRouteTable** allows a user to define how the packets that the CiM-550 receives are routed. By this table, an operator can define the minimum QOS bandwidth and maximum QOS bandwidth for a route. A user can also define which DES key to use for a route.

Table 13-27. Route Table OIDs

OID	Description
cimIpRouteIndex	Sequential number that corresponds to the row index in the route table. The route index starts at 1.
cimIpRouteName	Name assigned by the user to reference the route. The assigned name cannot contain any white space and must be unique.
cimIpRouteDestAddress	Destination IP address for the route.
cimIpRouteDestMaskLen	Length of the network portion of the subnet mask.
cimIpRouteNextHopAddress	IP address where the packet will be routed for further processing. The Next Hop IP Address must be on the same subnet as either the Ethernet or Satellite interfaces.
cimIpRouteMulticastOptions	Allows a user to specify if multicast packets will be routed from the Ethernet to Satellite or Satellite to Ethernet.
cimIpRouteMulticastOptions	This OID can be set to:

1	No Routing
2	Eth To Sat Routing
3	Sat To Eth Routing
4	Sat To Eth And Eth To Sat Routing

Note: The “cimIpRouteMinQosBandwidth” and “cimIpRouteMaxQosBandwidth” OIDs will only be accessible if the QOS FAST feature has been purchased and activated. Otherwise, GETS will return zero and sets will return an error.

cimIpRouteMinQosBandwidth	Establishes a guaranteed minimum data rate that a route must support. A value of 0 implies that a route is not guaranteed any bandwidth. The minimum QOS bandwidth should be in multiples of 8 Kbps.

OID	Description
cimIpRouteMaxQosBandwidth	Establishes a hard maximum traffic rate that can be processed by the CiM-550. A value of 0 for this field implies that no maximum limit is assigned to a route. This value should be in multiples of 8 Kbps.

Note: The “cimIpRouteDesKey” OID will only be accessible if the Encryption FAST feature has been purchased and activated. Otherwise, a get will return 1 (clear) and a set will return an error.

cimIpRouteDesKey

Allows the user to specify which Encryption Key should be used to encrypt traffic for a route. This parameter can be one of three values: clear, key1, or key2. Clear will force the CiM-550 to not encrypt any traffic processed for the route. Key1 will use the key specified in the first key to encrypt traffic for the route. Key2 will use the second key to encrypt traffic for the route.

Can be set to:

1	Clear
2	Key 1
3	Key 2
4	Random

cimIpRouteRowStatus

Used in get operations to tell if the route table entry is active. It is used in set operations to tell if a new route table entry is to be created or an existing route table entry is to be deleted.

It returns 1 (active) to indicate that the route entry is available for use by the managed device. The values of 2 (notInService) and 3 (notReady) are not supported.

When a new route entry is created, this OID must be set to 4 (createAndGo). The value of 5 (createAndWait) is not supported.

If an existing row is to be deleted this OID must be set to 6 (destroy), which indicates that the user wishing to delete the route from the route table.

The “cimIpRouteRowStatus” can return:

1	Active

The “cimIpRouteRowStatus” can be set to the following for row create/delete:

4	Create And Go
6	Destroy

cimIpRoute Priotity

Specifies the rooute QoS priority. Ther priority level can be set to:

1	High
2	Low

13.4.2.4 PROTOCOLS GROUP

13.4.2.4.1 IGMP Configuration Subgroup

Note: This subgroup will only be accessible in the MIB tree if the IGMP FAST feature has been purchased and activated. Otherwise, both gets and sets on these OIDs will return errors.

Table 13-28. IGMP Configuration Subgroup OIDs

OID	Description
cimIgmpTable	Reports the host groups being routed by the modem. This table shows the minimum time before a host group will be put out of service.
cimIgmpEnable	Allows a user to enable or disable the IGMP feature. When enabled, multicast packets received from the Satellite Interface are forwarded to the Ethernet Interface if a host on the Ethernet LAN has joined the host group via an IGMP report.
cimIgmpQueryPeriod	Defines the time interval (in seconds) in which the modem sends out its host membership Query messages.
cimIgmpMaxRespTime	Defines the time interval (in seconds) that the modem waits before it assumes that no hosts are interested in the membership query. The max response time is 25 seconds.
cimIgmpMaxMissBeforeDrop	Number of unanswered queries that must occur before the modem assume that that group has no local members and that it need not forward remotely-originated multicasts for that group onto the local network.
cimIgmpRecognizeQueries	Allows the modem to respond to a Query by generating Host Membership Reports, telling each host group to which it belongs on the network interface from which the Query was received.
cimIgmpVersionUnsolicitedReports	Defines which version of the IGMP protocol should be followed when attempting to join a host group via an unsolicited report.
cimIgmpForceAlertOption	Provides a mechanism whereby routers can intercept packets not addressed to them directly, without incurring any significant performance penalty. Some Cisco routers may require the definition of a Router Alert Option to recognize a report from a host to join a host group.
cimIgmpUnsolicitedReportInterval	Configures the modem to generate an unsolicited report within a specified time intervals (in seconds) after joining a host group.

13.4.2.4.2 ARP Configuration Subgroup

Table 13-29. ARP Configuration Subgroup OIDs

OID	Description
cimFlushArpTable	Can be used to flush the non-static ARP table.

The **cimArpTable** is used to configure the static ARP table. This table allows up to 256 static ARP entries. The Static ARP entries provided by the CiM-550 fall into two categories: IP-to-MAC and IP-to-HDLC.

Note: For the CiM-550 to properly route packets over the Satellite Interface, all of the Next Hop Addresses in the route table MUST have an IP-to-HDLC mapping in the static ARP table. Incoming packets that match a route in the route table that does not have an IP-to-HDLC mapping in the static ARP table will be discarded.

Table 13-30. CiM ARP Table OIDs

OID	Description
cimArpIndex	Sequential number that corresponds to the row index in the ARP table. The ARP entry index starts at 1.
cimArpIpAddress	Used as a lookup into the ARP table when the CiM-550 needs to resolve a MAC or HDLC Address. The IP Address must be on the same subnet as the Ethernet or Satellite Interfaces. It must not map to multiple HDLC or MAC addresses. The IP Address must be a valid Unicast address.
cimArpPhysAddress	This can either be a MAC address or a HDLC address. Valid MAC addresses are in the form “xx:xx:xx:xx:xx:xx”, where “x” represents any HEX number. Valid HDLC addresses are number from 1 to 65534 that represent HEX numbers between 1 – FFFE.
cimArpPhysType	Indicates if the ARP entry is an IP-to-MAC or an IP-to-HDLC translation. This OID can be set to: 1 – IP To MAC 2 – IP To HDLC

OID	Description
cimArpRowStatus	Used for to create or delete an ARP entry. This OID returns 1 (active) to indicate that an ARP entry is available for use by the managed device. The values of 2 (notInService) and 3 (notReady) are not supported. When creating a new ARP entry this OID must be set to 4 (createAndGo). The value of 5 (createAndWait) is not supported. When deleting an ARP this OID must be set to 6 (destroy), which indicates that the user wishes to delete the route from the route table. Can return: 1 Active Can be set to the following for row create/delete: 4 Create And Go 6 Destroy

13.4.2.5 REDUNDANCY GROUP

Table 13-31. Redundancy OIDs

OID	Description
cimCurrentRedundantState	Displays if the modem is Online and Offline. The Online modem is the one that will process traffic. The Offline modem monitors the health of the online unit and will take over if it detects a failure.
cimLocalUnitManagementIpAddress	IP Address for the Ethernet Interface for the Local Unit.
cimRedundantUnitManagementIpAddress	IP Address for the Ethernet Interface of the Remote Unit.
cimRedundantTrafficIpAddress	Traffic IP address will always be active on the Online Modem. When a fault occurs the traffic IP address will float between the two redundant modems.
cimRedundantTrafficSubnetMaskLen	This is the length of the traffic IP address and can float between the two redundant modems depending on if a failure occurs.
cimForceUnitOffline	Forces a redundant switchover so that if the modem is online it will transition to offline and stop processing traffic. If the modem is already offline, then this command will be ignored.

13.4.2.6 OPERATION AND MAINTENANCE GROUP

Table 13-32. Operation and Maintenance Subgoup OIDs

OID	Description
cimAppVersion	Displays the CiM Software's name, version, and date.
cimSaveConfiguration	Allows a user to save the current configuration of the CiM-550 to permanent storage.
cimReset	Allows a user to reboot the modem. It has the same logical effect of power-cycling the unit.

13.4.2.6.1 Remote Port B Configuration Subgroup

This subgroup defines the Remote Port B configuration.

Table 13-33. Remote Port B Configuration Subgroup OIDs

OID	Description
cimRemotePortBDeviceAddress	Defines the device address. Valid addresses are in the range from 0 to 9999.
cimRemotePortBBaudRate	Defines the speed of the serial interface. Can be set to: 1 = 1200 2 = 2400 3 = 4800 4 = 9600 5 = 19200 6 = 38400
cimRemotePortBFormat	Supports three configurations for the Remote Port B interface. Each format defines a triple that describes the data bits, parity, and stop bits. Can be set to: 1 = 8-N-1 (8 data bits, no parity, 1 stop bit) 2 = 7-E-2 (7 data bits, even parity, 2 stop bits) 3 = 7-O-2 (7 data bits, odd parity, 2 stop bits)
cimRemotePortBInterface	Configures the UART to operate in one of three types of physical EIA-xxx interfaces {EIA-232, EIA-485, EIA-485-4W}. The OID can be set to: 1 = EIA-232 2 = EIA-485 2W 3 = EIA-485 4W

13.4.2.6.2 Satellite Transmit Statistics Subgroup

This subgroup contains a table to show the number of packets transmitted on each route destined for the satellite interface. It also contains the number of packets dropped and the route's data rate.

Table 13-34. Satellite Transmit Statistics Subgroup OIDs

OID	Description
cimSatelliteTransmitIndex	This is a sequence number defining the row in the Satellite Transmit Statistics table.
cimSatelliteTransmitRouteName	Route name defined in the modem's route table.
cimSatelliteTransmitTotalPacketsTransmitted	Total packets transmitted for the route.
cimSatelliteTransmitTotalPacketsDropped	Total packets dropped for the route.
cimSatelliteTransmitMinDataRate	Minimum data rate sustained on the route.
cimSatelliteTransmitMaxDataRate	Maximum data rate sustained on the route.
cimSatelliteTransmitAvgDataRate	Average data rate sustained on the route.

13.4.2.6.3 IP Routing Statistics Subgroup

Table 13-35. IP Routing Statistics Subgroup OIDs

OID	Description
cimUnicastIpPacketsToSatellite	Number of unicast packets that were routed to the Satellite Interface. (Ethernet to Satellite or Satellite to Satellite)
cimUnicastIpPacketsToEthernet	Number of unicast packets that were routed to the Ethernet Interface. (Satellite to Ethernet or Ethernet to Ethernet).
cimMulticastIpPacketsToSatellite	Number of multicast packets that were routed to the Satellite Interface. (Ethernet to Satellite or Satellite to Satellite)
cimMulticastIpPacketsToEthernet	Number multicast packets that were routed to the Ethernet Interface. (Satellite to Ethernet or Ethernet to Ethernet).
cimBroadcastIpPacketsToSatellite	Number of broadcast packets that were routed to the Satellite Interface. (Ethernet to Satellite or Satellite to Satellite).
cimBroadcastIpPacketsToEthernet	Number of broadcast packets that were routed to the Ethernet Interface. (Satellite to Ethernet or Ethernet to Ethernet).
cimPacketsFromSatellite	Total of all packets destined to the Ethernet Interface and the Satellite to Satellite routed packets.
cimTotalIpPacketsToSatellite	Summation of the unicast, multicast and broadcast packets routed to the Satellite Interface.
cimTotalIpPacketsToEthernet	Summation of the unicast, multicast and broadcast packets routed to the Ethernet Interface.
cimIgmpPacketsReceived	Number of IGMP packets received.
cimIpOptionPacketsReceived	Number of IP Options packets received.
cimDroppedPacketsTotal	Number of total packets that were dropped by the CiM-550.
cimDroppedPacketsTTLExpired	Number of packets that were discarded because their Time-To-Live value reached zero.
cimDroppedPacketsBadIpHeader	Total number of packets that were received by the CiM-550 that contained CRC errors. If received packets contain CRC errors, then the CiM-550 discards the packet.

OID	Description
cimDroppedPacketsNoRoute	Number of packets that were dropped because their destination address did not match any of the configured routes in the CiM-550 Route table.
cimDroppedPacketsMulticastNoStoe	Number of multicast packets that where filtered because of the configurable filtering option.
cimDroppedPacketsFiltered	Number of packets that were dropped because they matched a “filter” route.
cimDroppedPacketsMulticastDisableGroup	Number of packets dropped because they did not match an active multicast group.
cimDroppedPacketsNoArpEntry	Number of Unicast packets that were dropped because an address translation was unavailable.
cimDroppedPacketsBadBufferLength	Number of packets that were dropped in the buffer.
cimDroppedPacketsBadIpVersion	Indicates that the packet had an IPv6 header and was dropped. The CiM-550 only supports IPv4.
cimDroppedPacketsMiscellaneous	Number of packets dropped for an unspecified or miscellaneous reason.
cimDroppedPacketsQos	Number of packets that were dropped because the packets were destined for a particular route where the maximum bandwidth had been exceeded.
cimDroppedPacketsQosBuffers	Number of packets that were dropped because the buffers used to store QOS packets have been exhausted.
cimDroppedPacketsDroppedBuffers	Number of packets that were dropped because the CiM-550’s buffers have been exhausted. This occurs when the packet rate through the CiM-550 has exceeded the factory defined limits.
cimResetCounters	Resets all statistics to zero.

13.5 CiM 550 Private MIB

13.5.1 CiM 550 Objects Group

13.5.1.1 System Information:

Table 13-36. ARP Configuration Subgroup OIDs

OID	Description
cim550EquipmentID	Unit's equipment ID.
cim550UnitSerialNumber	Unit's serial number.
cim550SoftwareRevision	Unit's softeare revision.
cim550DeviceTime	Device time. Current time is in hh:mm:ss format.
cim550DeviceDate	Device date. Current date is in mm/dd/yy format.
cim550CircuitID	Circuit ID. User defined string that will be displayed on the front panel.
cim550LocalRemoteState	Local/Remote state. Can be set to: 0 Local 1 Remote

13.5.1.2 Tx Parameters

Table 13-37. Tx Parameters OIDs

OID	Description
cim550TxFrequency	Transmit frequency in Hz. Valid ranges are from 52,000,000 Hz to 88,000,000 Hz and 104,000,000 Hz to 188,000,000 Hz.
cim550TxDataRate	Transmit data rate in bps. Valid range is from 2,400 bps to 2,048,000 bps.
cim550TxModType	Transmit modulation type. Valid values are: 1 BPSK 2 QPSK 3 OQPSK

OID	Description

cim550TxFECType Transmit forward error correction coding type. Valid values are:

0	None
1	Vit
2	Seq
3	Vit RS
4	Seq RS
5	Turbo Q 3/4
6	Turbo B 21/44
7	Turbo B 5/16

cim550TxFECCodeRate Transmit forward error correction code rate. Can be set to:

1	Rate 1/2
3	Rate 3/4
7	Rate 7/8
8	Rate 21/44
9	Rate 5/16

cim550TxSpecInv Transmit spectral inversion seletion. Can be set to:

0	Normal
1	Inverted

cim550TxScrambler Transmit scrambler state. Can be set to:

0	Off
1	On

cim550TxClockSource Transmit clock source. Can be set to:

1	Internal
2	External
3	LoopTmed

cim550TxPowerLevel Transmit output power level. Can be set from 0 to –200. The units are 0.1 dBm (0 = 00.0 dBm to -200 = -20.0 dBm).

cim550TxCarrierState Transmit carrier on/off state. Can be set to:

0	Off
1	On
2	Ext Off
3	Rti

13.5.1.3 Rx Parameters

Table 13-38. Rx Parameters OIDs

OID	Description
cim550RxFrequency	Receive frequency in Hz. Can be set from 52,000,000 Hz to 88,000,000 Hz and 104,000,000 Hz to 188,000,000 Hz.
cim550RxDataRate	Receive data rate in bps. Can be set between 2,400 bps and 2,048,000 bps.
cim550RxDemodType	Receive demodulation type. Can be set to: 1 BPSK 2 QPSK 3 OQPSK
cim550RxFECType	Receive forward error correction decoding type. Can be set to: 0 None 1 Vit 2 Seq 3 Vit RS 4 Seq RS 5 Turbo Q 3/4 6 Turbo B 21/44 7 Turbo B 5/16
cim550RxFECCodeRate	Receive forward error correction code rate. Can be set to: 1 Rate 1/2 3 Rate 3/4 7 Rate 7/8 8 Rate 21/44 9 Rate 5/16
cim550RxSpecInv	Receive spectrum inversion state. Can be set to: 0 Normal 1 Inverted
cim550RxDescrambler	Receive descrambler state. Can be set to: 0 Off 1 On

OID	Description
cim550RxClockMode	Receive clock mode. Can be set to: 0 Disabled 1 Enabled
cim550RxBufferSize	Receive buffer size in bits. Can be set to: 1 256 bits 2 512 bits 3 1024 bits 4 2048 bits 5 4096 bits
cim550RxAcqSweepRange	Receive +/- acquisition sweep range of deomulation in KHz. Can be set between 1 and 30.
cim550RxEbnoAlarmPoint	Receive Eb/No alarm point in dB. Can be set between 0 and 160 in 0.1 dB where (0=0.0 dB to 160=16.0 dB).

13.5.1.4 INTERFACE PARAMETERS

Table 13-39. Interface Parameters OIDs

OID	Description
cim550IfImpedance	IF interface impedance. Can be set to: 5 50 Ohm 7 75 Ohm
cim550InterfaceType	Unit interface type. Can only be set to IP. 4 IP

13.5.1.5 UTILITY PARAMETERS

Table 13-40. Utility Parameters OIDs

OID	Description
cim550UnitFramingMode	Unit framing mode. Can be set to: 0 Unframed 1 Framed

OID	Description
cim550EdmacAddress	The EDMAC slave address will set the range of addresses of distant-end units (modems and transceivers) which this unit will forward messages for. Only values that are integer multiples of ten are permitted. Setting the EDMAC slave address to 0 disables this function. Valid slave addresses are between 0 and 9999.
cim550UnitTestMode	Unit test mode. Can be set to:

0	Normal
1	IF Loop Back
2	Digital Loop Back
3	IO Loop Back
4	Tx CW
5	Tx Alternating Pattern

cim550RecenterBuffer	Command to force the modem to re-center the receive buffer. A value of 1 (yes) is used to issue the operation.
cim550ForceRedundentSwitch	Command to force the modem into STANDBY mode if it is in a redundant pair. A value of 1 (yes) is used to issue the operation.
cim550UnitAlarmMask	Alarm mask conditions, in the form “abcde”, where: a = mask Tx AIS alarm, b = mask Rx AGC alarm c = mask buffer alarms, d = mask Rx AIS alarm e = mask Eb/No alarm Setting any of these bytes to 0 unmasks alarm, setting to 1 masks them. Valid values are between 0 and 11111.
cim550UnitConfigStore	Forces the unit to store the current modem configuration in a configuration memory location defined by values 0 to 9.
cim550UnitConfigLoad	Forces the unit to retrieve the configuration memory location defined by values 0 to 9 and to re-program the unit with that stored configuration.
cim550OduCommEnable	Enables or disables communication, via an FSK serial link, with a Comtech Transceiver (Outdoor unit). Can be set to:

0	Disable
1	Enable

13.5.1.6 THE “”AUPC PARAMETERS

Table 13-41. AUPC Parameter OIDs

OID	Description
cim550AupcEnable	Enables or disables AUPC (Automatic Uplink Power Control). Can be set to: 0 Disable 1 Enable
cim550AupcControlParameters	Defines AUPC (Automatic Uplink Power Control) operating parameters. Has the form abc.cd Where: a = Define action on max power condition: 0 = do nothing 1 = generate TX alarm b = Define action on remote demod unlock: 0 = go to nominal power 1 = go to max power c.c = Target Eb/No value, in dB, for remote demod d = Maximum increase in Tx Power permitted, in dB
cim550RemoteEbno	Returns the value of Ebi/No of the remote demod, if Framing is enabled. Returns 999 if demod is unlocked. Returns -1 if Framing is not enabled. Ebi/No values can be between 20 and 60 in 0.1 dBs where 20=2.0 dB to 160=16.0 dB.
cim550TxPowerLevelIncrease	Returns the increase in Tx power level, in dB (from the nominal setting) due to the action of AUPC. Returns –1 if AUPC is not enabled. Values can be between 0 and 90 in 0.1 dBm where 0 = 0.0 dBm to 90 = 9.0 dBm

13.5.1.7 STATUS PARAMETERS

Table 13-42. Status Parameter OIDs

OID	Description
cim550RxEbno	Value of Ebi/No, can be between 0 and 160 in 0.1 dB where 0 = 0.0 dB to 160 = 16.0 dB and 999 = Demod Unlocked
cim550RxCoarseAGC	Vaue of Coarse AGC setting, can be between 0 and 99.
cim550RxFrequencyOffset	Value of frequency offset of the carrier being demodulated. Can be between -30 KHz and 30 KHz where -30 = -30 KHz to 30=+30 KHz and 999 = Demod Unlock.
cim550BufferFillState	Value of the buffer fill state. Can be between 0 and 99 in percentage filled.
cim550RxBER	Value of the estimated corrected bit error rate. Value has been multiplied by $10E^{-10}$.
cim550RedundancyState	Returns the redundancy state of the unit, where: 0 = Off Line (forced into standby by 1:N or 1:1 Switch) 1= On Line (normal). Valid values are:

0	Offline
1	Online

cim550ModemUnitFaults	Returns the current fault and status codes for the Unit (hardware). The value will be a integer between 0 and 8191 where the bit that is set indicates which fault has occurred:

bit 0	not used, always 0
bit 1	volt power supply
bit 2	12 volt power supply
bit 3	5 volt power supply
bit 4	18 volt power supply
bit 5	12 volt power supply
bit 6	RAM load fail
bit 7	Tx synthesizer unlocked
bit 8	Rx synthesizer unlocked
bit 9	Power cal checksum fail
bit 10	FPGA main chain load fail
bit 11	Turbo FPGA load fail
bit 12	IP Module fail

OID	Description
cim550ModemTxTrafficFaults	Returns the current fault and status codes for the Tx Traffic. The value will be an integer between 0 and 31 where the bit that is set indicates the fault that has occurred:

bit 0	Not used, always 0
bit 1	No clock from terrestrial interface
bit 2	Tx FIFO slip
bit 3	AIS Detected on incoming data
bit 4	AUPC upper limit reached

cim550ModemRxTrafficFaults	Returns the current fault and status codes for the Rx Traffic. The value will be an integer between 0 and 255 where the bit that is set indicates the fault that has occurred:

bit 0	Not used, always 0
bit 1	Demod Unlock
bit 2	AGC alarm
bit 3	Frame Sync lost
bit 4	Buffer underflow
bit 5	Buffer overflow
bit 6	AIS detected on incoming data
bit 7	Eb/No Threshold exceeded

13.5.1.8 LOGS

Table 13-43. Logs OIDs

OID	Description
cim550ClearEventsLog	Instructs the unit to clear all Stored Events. A value of 1 (yes) is used to clear the event log.
cim550NumberUnreadEvents	Returns the number of Stored Events which remain unread. The value can be between 0 and 99.
cim550RetrieveNext5Events	Unit returns the oldest 5 Stored Events which have not yet been read over the remote control. Reply format: {CR}Subbody{CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Subbody, where Sub-body= ABCddmmyyhhmmss, A being the fault/clear indicator: F=Fault, C=Clear, I=Info. B being the fault type where: 1=Unit, 2=Rx, Traffic, 3=Tx Traffic, 4=Power on/off, or log cleared. C being the fault code, where the Info codes are: 0=power off, 1=power on, 2=log cleared, 3=global config change, and 4=redundancy config change. ddmmyyhhmmss = date/time stamp. If there are less than 5 events to be retrieved, the remaining positions are padded with zeros.
cim550SetStatisticInterval	Used to set the sample interval for the Statistics Logging Function. Can be set to: 0 None 1 10 Mins 2 20 Mins 3 30 Mins 4 40 Mins 5 50 Mins 6 60 Mins 7 70 Mins 8 80 Mins 9 90 Mins
cim550ClearStatisticsLog	Instructs the unit to clear all Stored Statistics. Can be set to 1 (yes) to clear the log.
cim550NumberUnreadStatistics	Returns the number of Stored Statistics which remain unread. Can be between 0 and 250.

OID	Description
cim550RetrieveNext5Statistics	Unit returns the oldest 5 Stored Statistics which have not yet been read over the remote control. Reply format: {CR}Sub-body{CR}Sub-body{CR}Sub-body{CR}Subbody{CR}Sub-body, where Sub-body= AA.ABB.BC.CD.Dddmmyyhhmmss, AA.A = Minimum Eb/No during sample period. BB.B = Average Eb/No during sample period. C.C = Max. Tx Power Level Increase during sample period. D.D = Average Tx Power Level Increase during sample period. ddmmyyhhmmss = date/time stamp. If there are less than 5 statistics to be retrieved, the remaining positions are padded with zeros.

13.5.1.9 ODU OBJECTS

The “oduSelect” determines which transceiver to communicate with. It can be set to:

1	Odu 1
2	Odu 2

13.5.1.10 ODU SYSTEM INFORMATION

Table 13-44. ODU System Information OIDs

OID	Description
oduModelNumberSoftwareVer	Read-only string describing the ODU model number and software version.
oduUnitSerialNumber	Read-only string containing the ODU serial number.
oduDeviceTime	Time in hh:mm:ss format.
oduDeviceDate	Date in dd/mm/yy format.
oduCircuitID	User defined string for display purposes.

13.5.1.11 ODU UNIT PARAMETERS

Table 13-45. ODU Unit OIDs

OID	Description
oduUnitMuteMode	Unit mute. Can be set to: 0 Unmute 1 Mute
oduUnitColdStart	Unit cold start. Can be set to: 0 Disabled 1 Enabled
oduUnitAutoFaultRecovery	Auto fault recovery. Can be set to: 0 Disabled 1 Enabled
oduUnitExtRefFaultLogic	External reference fault logic. Can be set to: 0 Disabled 1 Enabled
oduUnitRefOscAdjust	Reference oscillator adjust. Can be between 0 and 255.
oduUnitLNACurrentSource	LNA current source. Can be set to: 0 Disabled 1 Enabled
oduUnitLNACurrentWindow	LNA current windows. Can be set to: 20 20 Percent 25 25 Percent 30 30 Percent 35 35 Percent 40 40 Percent 45 45 Percent 50 50 Percent 99 Disabled
OduUnitLNAFaultLogic	LNA fault logic. Can be set to: 0 Disabled 1 Enabled
oduUnitRedundancyMode	Redudancy mode. Can be set to: 0 Manual 1 Auto
oduUnitRedForceSwitch	Force redundant switch. Can be set to 1 (yes) to issue command.

13.5.1.12 ODU Tx Parameters

Table 13-46. ODU Tx Parameters OIDs

OID	Description
OduTxFrequency	Transmit frequency in KHz. Can be set between 5,845,000 KHz and 181,00,000 KHz.
OduTxAttenuation	Transmit attenuation. Can be between 0 and 2000 in 0.01 dB, where 0 = 0.00dB to 2000 = 20.00dB.
OduTxAmplifier	Transmit amplifier. Can be set to: 0 Off 1 On
OduTxMute	Transmit mute. Can be set to: 0 Disabled 1 Enabled
OduTxSlopeMode	Transmit slope mode. Can be set to: 0 Manual 1 Calibrated
OduTxSlopeValue	Transmit slope value. Can be between 0 and 10 in 0.1 units, where 0 = 0.0 to 10 = 1.0.
OduTxGainOffset	Transmit gain offset. Can be between –400 and 0 in 0.01dB, where 0 = 0.00 dB to –400 = -4.00dB.

13.5.1.13 ODU Rx Parameters

Table 13-47. ODU Rx Parameters OIDs

OID	Description
OduRxFequency	Receive frequency in KHz. Can be between 3,625,000 KHz and 14,100,000 KHz.
oduRxAttenuation	Receive attenuation. Can be between 0..2500 in 0.01dB where 0=0.00dB to 2500=25.00dB.
oduRxMute	Receive mute. Can be set to: 0 Disabled 1 Enabled
oduRxSlopeMode	Receive slope mode. Can be set to: 0 Manual 1 Calibrated
oduRxSlopeValue	Receive slope value. Can be between 0..10 in 0.1, where 0=0.0 to 10=1.0.
oduRxGainOffset	Receive gain offset. Can be between -400 and 0 in 0.01 dB, where 0=0.00 dB to -400 = -4.00dB

13.5.1.14 ODU UNIT STATUS

Table 13-48. ODU Unit Status OIDs

OID	Description
OduOnlineState	Online state. Can be set to: 0 Offline 1 Online
oduMaintenanceParameters	Used to Query the maintenance status of the CSAT. Example: 24VT=023.9'cr' 20VT=020.3'cr' 12VT=012.0'cr' 10VT=010.2'cr' P5VT=005.0'cr' N5VT=-05.0'cr' USYN=008.2'cr' UIFL=003.9'cr' DSYN=006.3'cr' DIFL=003.8'cr' REFV=002.9'cr' LNAC=081.9'cr' FANC=541.0'cr' UTMP= 37.0'cr' POWR=25.0-'cr' DTMP= 34.0'cr''lf'

OID	Description
OduUnitFaults	Used to Query the Alarm status of the CSAT. A integer value will be returned between 0..262143 where the bits that are set indicate the faults which have occurred:

bit 0	24 volt power supply
bit 1	20 volt power supply
bit 2	12 volt power supply
bit 3	10 volt power supply
bit 4	+5 volt power supply
bit 5	-5 volt power supply
bit 6	Tx Synthesizer Unlocked
bit 7	Tx IFLO Unlocked
bit 8	Rx Synthesizer Unlocked
bit 9	Rx IFLO Unlocked
bit 10	Reference lock detect
bit 11	LNA Current Alarm
bit 12	Fan Current Alarm
bit 13	Temperature Alarm
bit 14	HPA Thermal Shutdown Alarm
bit 15	Internal IIC Bus Alarm
bit 16	EEPROM Checksum
bit 17	NVRAM/RTC Low Battery Alarm

13.5.1.15 ODU LOGS

Table 13-49. ODU Logs OIDs

OID	Description
oduClearEventsLog	Can be set to 1 (yes) to issue command.
oduNumberUnreadEvents	CSAT returns the number of Stored Events which remain unread. Value can be between 0 and 99.
oduRetrieveNext5Events	CSAT returns the oldest 5 Stored Events that have not yet been read over the remote control. Reply format: Sub-body{CR}Sub-body{CR}Sub-body{CR}Subbody{CR}Sub-body, where Sub-body=YYYYYYYYYY ZZ mmddyyhhmmss, YYYYYYYYYY being the fault description. ZZ being the alarm type: FT = Fault, OK = Clear, IF = Information. mmddyyhhmmss = date/time stamp.

13.6 CiM IP Controller MIB Tree:

MIB Tree:

1 --- iso

1.3 --- org

1.3.6 --- dod

1.3.6.1 --- internet

1.3.6.1.4 --- private

1.3.6.1.4.1 --- enterprises

1.3.6.1.4.1.6247 --- comtech

1.3.6.1.4.1.6247.4 --- cimController

1.3.6.1.4.1.6247.4.1 --- cimControllerIdentity

1.3.6.1.4.1.6247.4.2 --- cimAdministration

1.3.6.1.4.1.6247.4.2.1 --- cimMibVersion (INTEGER)

1.3.6.1.4.1.6247.4.2.3 --- cimNamePasswordConfig

1.3.6.1.4.1.6247.4.2.3.1 --- cimAdminName (DisplayString)

1.3.6.1.4.1.6247.4.2.3.2 --- cimAdminPassword (DisplayString)

1.3.6.1.4.1.6247.4.2.3.3 --- cimReadWriteName (DisplayString)

1.3.6.1.4.1.6247.4.2.3.4 --- cimReadWritePassword (DisplayString)

1.3.6.1.4.1.6247.4.2.3.5 --- cimReadOnlyName (DisplayString)

1.3.6.1.4.1.6247.4.2.3.6 --- cimReadOnlyPassword (DisplayString)

1.3.6.1.4.1.6247.4.2.4 --- cimAccessLists

1.3.6.1.4.1.6247.4.2.4.1 --- cimAccessIpAddress1 (IpAddress)

1.3.6.1.4.1.6247.4.2.4.2 --- cimAccessSubnetMaskLen1 (INTEGER)

1.3.6.1.4.1.6247.4.2.4.3 --- cimAccessIpAddress2 (IpAddress)

1.3.6.1.4.1.6247.4.2.4.4 --- cimAccessSubnetMaskLen2 (INTEGER)

1.3.6.1.4.1.6247.4.2.4.5 --- cimAccessIpAddress3 (IpAddress)

1.3.6.1.4.1.6247.4.2.4.6 --- cimAccessSubnetMaskLen3 (INTEGER)

1.3.6.1.4.1.6247.4.2.4.7 --- cimAccessIpAddress4 (IpAddress)

1.3.6.1.4.1.6247.4.2.4.8 --- cimAccessSubnetMask4 (INTEGER)

1.3.6.1.4.1.6247.4.2.4.9 --- cimAccessListEnforcement (YesNo)

1.3.6.1.4.1.6247.4.2.5 --- cimFeaturesAvailability

1.3.6.1.4.1.6247.4.2.5.1 --- cimDatagramCompressionOption (Availability)
1.3.6.1.4.1.6247.4.2.5.2 --- cimNaptOption (Availability)
1.3.6.1.4.1.6247.4.2.5.3 --- cimQosOption (Availability)
1.3.6.1.4.1.6247.4.2.5.4 --- cimTcpAccelerationOption (Availability)
1.3.6.1.4.1.6247.4.2.5.5 --- cimTransparentBridgeOption (Availability)
1.3.6.1.4.1.6247.4.2.5.6 --- cimEncryptionOption (Availability)
1.3.6.1.4.1.6247.4.2.5.7 --- cimIgmpOption (Availability)
1.3.6.1.4.1.6247.4.2.5.8 --- cimHeaderCompressionOption (Availability)
1.3.6.1.4.1.6247.4.2.6 --- cimFeaturesConfig
1.3.6.1.4.1.6247.4.2.6.1 --- cimMidasFeature (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.2 --- cimTelnetFeature (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.3 --- cimPingResponseFeature (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.4 --- cimDownlinkMulticastRoutingFeature (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.5 --- cimDatagramCompressionOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.6 --- cimNaptOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.7 --- cimQosOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.8 --- cimTcpAccelerationOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.9 --- cimTransparenetBridgeOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.10 --- cimTransmitDesEncryptionOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.11 --- cimReceiveDesEncryptionOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.12 --- cimIgmpOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.6.13 --- cimHeaderCompressionOpt (EnableDisable)
1.3.6.1.4.1.6247.4.2.7 --- cimDesEncryptConfig
1.3.6.1.4.1.6247.4.2.7.1 --- cimTransmitEncryptEnabled (YesNo)
1.3.6.1.4.1.6247.4.2.7.2 --- cimReceiveDecryptEnabled (YesNo)
1.3.6.1.4.1.6247.4.2.7.3 --- cimTransmitKey1 (DisplayString)
1.3.6.1.4.1.6247.4.2.7.4 --- cimTransmitKey2 (DisplayString)
1.3.6.1.4.1.6247.4.2.7.5 --- cimReceiveKey1 (DisplayString)
1.3.6.1.4.1.6247.4.2.7.6 --- cimReceiveKey2 (DisplayString)
1.3.6.1.4.1.6247.4.2.8 --- cimSmtp
1.3.6.1.4.1.6247.4.2.8.1 --- cimSmtpServerIpAddress (IpAddress)
1.3.6.1.4.1.6247.4.2.8.2 --- cimSmtpDomain (DisplayString)

1.3.6.1.4.1.6247.4.2.8.3 --- cimSmtpDestinationName(DisplayString)

1.3.6.1.4.1.6247.4.2.9 --- cimSnmp

1.3.6.1.4.1.6247.4.2.9.1 --- cimSnmpTrapDestinationIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.2.9.2 --- cimSnmpTrapCommunity (DisplayString)

1.3.6.1.4.1.6247.4.2.9.3 --- cimSnmpTrapVersion (INTEGER)

1.3.6.1.4.1.6247.4.2.9.4 --- cimSnmpAuthenticationFailureCommunity (DisplayString)

1.3.6.1.4.1.6247.4.2.9.5 --- cimSnmpAuthenticationFailureAddress (IpAddress)

1.3.6.1.4.1.6247.4.3 --- cimInterfaces

1.3.6.1.4.1.6247.4.3.1 --- cimEthernetInterface

1.3.6.1.4.1.6247.4.3.1.1 --- cimEthernetMacAddress (DisplayString)

1.3.6.1.4.1.6247.4.3.1.2 --- cimEthernetSpeed (INTEGER)

1.3.6.1.4.1.6247.4.3.1.3 --- cimEthernetIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.3.1.4 --- cimEthernetSubnetPrefixLen (INTEGER)

1.3.6.1.4.1.6247.4.3.2 --- cimSatelliteInterface

1.3.6.1.4.1.6247.4.3.2.1 --- cimSatelliteIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.3.2.2 --- cimSatelliteSubnetPrefixLen (INTEGER)

1.3.6.1.4.1.6247.4.3.2.3 --- cimSatelliteReceiveEnable (EnableDisable)

1.3.6.1.4.1.6247.4.3.2.4 --- cimSatelliteTransmitEnable (EnableDisable)

1.3.6.1.4.1.6247.4.3.2.5 --- cimSatelliteHdlcAddress1 (INTEGER)

1.3.6.1.4.1.6247.4.3.2.6 --- cimSatelliteHdlcAddress2 (INTEGER)

1.3.6.1.4.1.6247.4.3.2.7 --- cimSatelliteHdlcAddress3 (INTEGER)

1.3.6.1.4.1.6247.4.3.2.8 --- cimSatelliteHdlcAddress4 (INTEGER)

1.3.6.1.4.1.6247.4.4 --- cimRouteTable

1.3.6.1.4.1.6247.4.4.1 --- cimGlobalQosEnable (EnableDisable)

1.3.6.1.4.1.6247.4.4.3 --- cimIpRouteTable (SEQUENCE OF CimIpRouteEntry)

1.3.6.1.4.1.6247.4.4.3.1 --- cimIpRouteEntry (CimIpRouteEntry)

1.3.6.1.4.1.6247.4.4.3.1.1 --- cimIpRouteIndex (INTEGER)

1.3.6.1.4.1.6247.4.4.3.1.2 --- cimIpRouteName (DisplayString)

1.3.6.1.4.1.6247.4.4.3.1.3 --- cimIpRouteDestAddress (IpAddress)

1.3.6.1.4.1.6247.4.4.3.1.4 --- cimIpRouteDestMaskLen (INTEGER)

1.3.6.1.4.1.6247.4.4.3.1.5 --- cimIpRouteNextHopAddress (IpAddress)

1.3.6.1.4.1.6247.4.4.3.1.6 --- cimIpRouteMulticastOptions (INTEGER)
1.3.6.1.4.1.6247.4.4.3.1.7 --- cimIpRouteMinQosBandwidth (INTEGER)
1.3.6.1.4.1.6247.4.4.3.1.8 --- cimIpRouteMaxQosBandwidth (INTEGER)
1.3.6.1.4.1.6247.4.4.3.1.9 --- cimIpRouteDesKey (INTEGER)
1.3.6.1.4.1.6247.4.4.3.1.10 --- cimIpRouteRowStatus (INTEGER)
1.3.6.1.4.1.6247.4.4.3.1.11 --- cimIpRoutePriority (INTEGER32)
1.3.6.1.4.1.6247.4.5 --- cimProtocols
1.3.6.1.4.1.6247.4.5.1 --- cimIgmpConfig
1.3.6.1.4.1.6247.4.5.1.1 --- cimIgmpTable (SEQUENCE OF CimIgmpEntry)
1.3.6.1.4.1.6247.4.5.1.1.1 --- cimIgmpEntry (CimIgmpEntry)
1.3.6.1.4.1.6247.4.5.1.1.1.1 --- cimIgmpIndex (INTEGER)
1.3.6.1.4.1.6247.4.5.1.1.1.2 --- cimIgmpTTL (INTEGER)
1.3.6.1.4.1.6247.4.5.1.1.1.3 --- cimIgmpClientState (INTEGER)
1.3.6.1.4.1.6247.4.5.1.1.1.4 --- cimIgmpSrc (INTEGER)
1.3.6.1.4.1.6247.4.5.1.1.1.5 --- cimIgmpGroupIpAddress (IpAddress)
1.3.6.1.4.1.6247.4.5.1.2 --- cimIgmpReceiver
1.3.6.1.4.1.6247.4.5.1.2.1 --- cimIgmpEnable (EnableDisable)
1.3.6.1.4.1.6247.4.5.1.2.2 --- cimIgmpQueryPeriod (INTEGER)
1.3.6.1.4.1.6247.4.5.1.2.3 --- cimIgmpMaxRespTime (INTEGER)
1.3.6.1.4.1.6247.4.5.1.2.4 --- cimIgmpMaxMissBeforeDrop (INTEGER)
1.3.6.1.4.1.6247.4.5.1.3 --- cimIgmpTransmiter
1.3.6.1.4.1.6247.4.5.1.3.1 --- cimIgmpRecognizeQueries (EnableDisable)
1.3.6.1.4.1.6247.4.5.1.3.2 --- cimIgmpVersionUnsolicitedReports (INTEGER)
1.3.6.1.4.1.6247.4.5.1.3.3 --- cimIgmpForceAlertOption (EnableDisable)
1.3.6.1.4.1.6247.4.5.1.3.4 --- cimIgmpUnsolicitedReportInterval (INTEGER)
1.3.6.1.4.1.6247.4.5.2 --- cimArpConfig
1.3.6.1.4.1.6247.4.5.2.1 --- cimFlushArpTable (YesNo)
1.3.6.1.4.1.6247.4.5.2.2 --- cimArpTable (SEQUENCE OF CimArpEntry)
1.3.6.1.4.1.6247.4.5.2.2.1 --- cimArpEntry (CimArpEntry)
1.3.6.1.4.1.6247.4.5.2.2.1.1 --- cimArpIndex (INTEGER)
1.3.6.1.4.1.6247.4.5.2.2.1.2 --- cimArpIpAddress (IpAddress)
1.3.6.1.4.1.6247.4.5.2.2.1.3 --- cimArpPhysAddress (DisplayString)

1.3.6.1.4.1.6247.4.5.2.2.1.4 --- cimArpPhysType (INTEGER)

1.3.6.1.4.1.6247.4.5.2.2.1.5 --- cimArpRowStatus (INTEGER)

1.3.6.1.4.1.6247.4.6 --- cimRedundancy

1.3.6.1.4.1.6247.4.6.1 --- cimCurrentRedundantState (INTEGER)

1.3.6.1.4.1.6247.4.6.2 --- cimLocalUnitManagementIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.6.3 --- cimRedundantUnitManagementIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.6.4 --- cimRedundantTrafficIpAddress (IpAddress)

1.3.6.1.4.1.6247.4.6.5 --- cimRedundantTrafficSubnetMaskLen (INTEGER)

1.3.6.1.4.1.6247.4.6.6 --- cimForceUnitOffline (YesNo)

1.3.6.1.4.1.6247.4.7 --- cimOperMaint

1.3.6.1.4.1.6247.4.7.1 --- cimAppVersion (DisplayString)

1.3.6.1.4.1.6247.4.7.2 --- cimSaveConfiguration (TrueFalse)

1.3.6.1.4.1.6247.4.7.3 --- cimReset (TrueFalse)

1.3.6.1.4.1.6247.4.7.4 --- cimRemotePortBConfig

1.3.6.1.4.1.6247.4.7.4.1 --- cimRemotePortBDeviceAddress (INTEGER)

1.3.6.1.4.1.6247.4.7.4.2 --- cimRemotePortBBaudRate (INTEGER)

1.3.6.1.4.1.6247.4.7.4.3 --- cimRemotePortBFormat (INTEGER)

1.3.6.1.4.1.6247.4.7.4.4 --- cimRemotePortBInterface (INTEGER)

1.3.6.1.4.1.6247.4.8 --- cimStatistics

1.3.6.1.4.1.6247.4.8.1 --- cimSatelliteTransmitStatistics

1.3.6.1.4.1.6247.4.8.1.1 --- cimSatelliteTransmitTable (SEQUENCE OF CimSatelliteTransmitEntry)

1.3.6.1.4.1.6247.4.8.1.1.1 --- cimSatelliteTransmitEntry (CimSatelliteTransmitEntry)

1.3.6.1.4.1.6247.4.8.1.1.1.1 --- cimSatelliteTransmitIndex (Integer32)

1.3.6.1.4.1.6247.4.8.1.1.1.2 --- cimSatelliteTransmitRouteName (DisplayString)

1.3.6.1.4.1.6247.4.8.1.1.1.3 --- cimSatelliteTransmitTotalPacketsTransmitted (Counter32)

1.3.6.1.4.1.6247.4.8.1.1.1.4 --- cimSatelliteTransmitTotalPacketsDropped (Counter32)

1.3.6.1.4.1.6247.4.8.1.1.1.5 --- cimSatelliteTransmitMinDataRate (INTEGER)

1.3.6.1.4.1.6247.4.8.1.1.1.6 --- cimSatelliteTransmitMaxDataRate (INTEGER)

1.3.6.1.4.1.6247.4.8.1.1.1.7 --- cimSatelliteTransmitAvgDataRate (INTEGER)

1.3.6.1.4.1.6247.4.8.2 --- cimIpRoutingStatistics

1.3.6.1.4.1.6247.4.8.2.1 --- cimUnicastIpPacketsToSatellite (Counter32)

1.3.6.1.4.1.6247.4.8.2.2 --- cimUnicastIpPacketsToEthernet (Counter32)

1.3.6.1.4.1.6247.4.8.2.3 --- cimMulticastIpPacketsToSatellite (Counter32)

1.3.6.1.4.1.6247.4.8.2.4 --- cimMulticastIpPacketsToEthernet (Counter32)

1.3.6.1.4.1.6247.4.8.2.5 --- cimBroadcastIpPacketsToSatellite (Counter32)

1.3.6.1.4.1.6247.4.8.2.6 --- cimBroadcastIpPacketsToEthernet (Counter32)

1.3.6.1.4.1.6247.4.8.2.7 --- cimPacketsFromSatellite (Counter32)

1.3.6.1.4.1.6247.4.8.2.8 --- cimTotalIpPacketsToSatellite (Counter32)

1.3.6.1.4.1.6247.4.8.2.9 --- cimTotalIpPacketsToEthernet (Counter32)

1.3.6.1.4.1.6247.4.8.2.10 --- cimIgmpPacketsReceived (Counter32)

1.3.6.1.4.1.6247.4.8.2.11 --- cimIpOptionPacketsReceived (Counter32)

1.3.6.1.4.1.6247.4.8.2.12 --- cimDroppedPacketsTotal (Counter32)

1.3.6.1.4.1.6247.4.8.2.13 --- cimDroppedPacketsTTLExpired (Counter32)

1.3.6.1.4.1.6247.4.8.2.14 --- cimDroppedPacketsBadIpHeader (Counter32)

1.3.6.1.4.1.6247.4.8.2.15 --- cimDroppedPacketsNoRoute (Counter32)

1.3.6.1.4.1.6247.4.8.2.16 --- cimDroppedPacketsMulticastNoStoe (Counter32)

1.3.6.1.4.1.6247.4.8.2.17 --- cimDroppedPacketsFiltered (Counter32)

1.3.6.1.4.1.6247.4.8.2.18 --- cimDroppedPacketsMulticastDisableGroup (Counter32)

1.3.6.1.4.1.6247.4.8.2.19 --- cimDroppedPacketsNoArpEntry (Counter32)

1.3.6.1.4.1.6247.4.8.2.20 --- cimDroppedPacketsBadBufferLength (Counter32)

1.3.6.1.4.1.6247.4.8.2.21 --- cimDroppedPacketsBadIpVersion (Counter32)

1.3.6.1.4.1.6247.4.8.2.22 --- cimDroppedPacketsMiscellaneous (Counter32)

1.3.6.1.4.1.6247.4.8.2.23 --- cimDroppedPacketsQos (Counter32)

1.3.6.1.4.1.6247.4.8.2.24 --- cimDroppedPacketsQosBuffers (Counter32)

1.3.6.1.4.1.6247.4.8.2.25 --- cimDroppedPacketsDroppedBuffers (Counter32)

1.3.6.1.4.1.6247.4.8.2.26 --- cimResetCounters (YesNo)

13.7 CiM IP Controller MIB

13.7.1 cimController

Name	cimController
OID	1.3.6.1.4.1.6247.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4)
Module	CIMController
Parent	comtech
Child	cimControllerIdentity
Type	MODULE-IDENTITY
Organization	Comtech EF Data
Last updated	200204180800Z
Contact info	2114 West 7th Street Tempe, AZ 85281 USA
Description	CIM IP Controller

13.7.2 cimControllerIdentity

Name	cimControllerIdentity
OID	1.3.6.1.4.1.6247.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimControllerIdentity(1)
Module	CIMController
Parent	cimController
Next sibling	cimAdministration
Type	OBJECT-IDENTIFIER

13.7.3 cimAdministration

Name	cimAdministration
OID	1.3.6.1.4.1.6247.4.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2)
Module	CIMController
Parent	cimController
Prev sibling	cimControllerIdentity
Next sibling	cimInterfaces
Child	cimMibVersion
Type	OBJECT-IDENTIFIER

13.7.4 CIMMIBVERSION

Name	cimMibVersion
OID	1.3.6.1.4.1.6247.4.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimMibVersion(1)
Module	CIMController
Parent	cimAdministration
Next sibling	cimNamePasswordConfig
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	1..256
Description	CIM Controller MIB Version

13.7.5 CIMNAMEPASSWORDCONFIG

Name	cimNamePasswordConfig
OID	1.3.6.1.4.1.6247.4.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimMibVersion
Next sibling	cimAccessLists
Child	cimAdminName
Type	OBJECT-IDENTIFIER

13.7.6 CIMADMINNAME

Name	cimAdminName
OID	1.3.6.1.4.1.6247.4.2.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimAdminName(1)
Module	CIMController
Parent	cimNamePasswordConfig
Next sibling	cimAdminPassword
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..16
Description	Admin Login Name

13.7.7 CIMADMINPASSWORD

Name	cimAdminPassword
OID	1.3.6.1.4.1.6247.4.2.3.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimAdminPassword(2)
Module	CIMController
Parent	cimNamePasswordConfig
Prev sibling	cimAdminName
Next sibling	cimReadWriteName
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..16
Description	Password for the Admin user

13.7.8 CIMREADWRITENAME

Name	cimReadWriteName
OID	1.3.6.1.4.1.6247.4.2.3.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimReadWriteName(3)
Module	CIMController
Parent	cimNamePasswordConfig
Prev sibling	cimAdminPassword
Next sibling	cimReadWritePassword
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..16
Description	Read/Write User Login Name

13.7.9 CIMREADWRITEPASSWORD

Name	cimReadWritePassword
OID	1.3.6.1.4.1.6247.4.2.3.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimReadWritePassword(4)
Module	CIMController
Parent	cimNamePasswordConfig
Prev sibling	cimReadWriteName
Next sibling	cimReadOnlyName
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Description	Password for Read/Write User

13.7.10 CIMREADONLYNAME

Name	cimReadOnlyName
OID	1.3.6.1.4.1.6247.4.2.3.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimReadOnlyName(5)
Module	CIMController
Parent	cimNamePasswordConfig
Prev sibling	cimReadWritePassword
Next sibling	cimReadOnlyPassword
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..16
Description	Read-only User Login Name

13.7.11 CIMREADONLYPASSWORD

Name	cimReadOnlyPassword
OID	1.3.6.1.4.1.6247.4.2.3.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimNamePasswordConfig(3).cimReadOnlyPassword(6)
Module	CIMController
Parent	cimNamePasswordConfig
Prev sibling	cimReadOnlyName
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..16
Description	Password for the Read-only user

13.7.12 CIMACCESSLISTS

Name	cimAccessLists
OID	1.3.6.1.4.1.6247.4.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimNamePasswordConfig
Next sibling	cimFeaturesAvailability
Child	cimAccessIpAddress1
Type	OBJECT-IDENTIFIER

13.7.13 CIMACCESSIPADDRESS1

Name	cimAccessIpAddress1
OID	1.3.6.1.4.1.6247.4.2.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessIpAddress1(1)
Module	CIMController
Parent	cimAccessLists
Next sibling	cimAccessSubnetMaskLen1
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Access IP Address 1

13.7.14 CIMACCESSSUBNETMASKLEN1

Name	cimAccessSubnetMaskLen1
OID	1.3.6.1.4.1.6247.4.2.4.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessSubnetMaskLen1(2)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessIpAddress1
Next sibling	cimAccessIpAddress2
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..32
Description	Subnet Mask Length 1

13.7.15 CIMACCESSIPADDRESS2

Name	cimAccessIpAddress2
OID	1.3.6.1.4.1.6247.4.2.4.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessIpAddress2(3)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessSubnetMaskLen1
Next sibling	cimAccessSubnetMaskLen2
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Access IP Address 2

13.7.16 CIMACCESSSUBNETMASKLEN2

Name	cimAccessSubnetMaskLen2
OID	1.3.6.1.4.1.6247.4.2.4.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessSubnetMaskLen2(4)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessIpAddress2
Next sibling	cimAccessIpAddress3
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..32
Description	Subnet Mask Length 2

13.7.17 CIMACCESSIPADDRESS3

Name	cimAccessIpAddress3
OID	1.3.6.1.4.1.6247.4.2.4.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessIpAddress3(5)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessSubnetMaskLen2
Next sibling	cimAccessSubnetMaskLen3
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Access IP Address 3

13.7.18 CIMACCESSSUBNETMASKLEN3

Name	cimAccessSubnetMaskLen3
OID	1.3.6.1.4.1.6247.4.2.4.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessSubnetMaskLen3(6)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessIpAddress3
Next sibling	cimAccessIpAddress4
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..32
Description	Subnet Mask Length 3

13.7.19 CIMACCESSIPADDRESS4

Name	cimAccessIpAddress4
OID	1.3.6.1.4.1.6247.4.2.4.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessIpAddress4(7)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessSubnetMaskLen3
Next sibling	cimAccessSubnetMask4
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Access IP Address 4

13.7.20 CIMACCESSSUBNETMASK4

Name	cimAccessSubnetMask4
OID	1.3.6.1.4.1.6247.4.2.4.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessSubnetMask4(8)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessIpAddress4
Next sibling	cimAccessListEnforcement
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..32
Description	Subnet Mask Length 4

13.7.21 CIMACCESSLISTENFORCEMENT

Name	cimAccessListEnforcement
OID	1.3.6.1.4.1.6247.4.2.4.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimAccessLists(4).cimAccessListEnforcement(9)
Module	CIMController
Parent	cimAccessLists
Prev sibling	cimAccessSubnetMask4
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Max-access	read-write
Description	Access List Enforcement
Note: Be sure that you have added the SNMP browser's/manager's IP Address to the access list before enabling access list filtering. Otherwise, the SNMP browser/manager will no longer be able to gain access to the CiM.	

13.7.22 CIMFEATURESAVAILABILITY

Name	cimFeaturesAvailability
OID	1.3.6.1.4.1.6247.4.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimAccessLists
Next sibling	cimFeaturesConfig
Child	cimDatagramCompressionOption
Type	OBJECT-IDENTIFIER

13.7.23 CIMDATAGRAMCOMPRESSIONOPTION

Name	cimDatagramCompressionOption
OID	1.3.6.1.4.1.6247.4.2.5.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimDatagramCompressionOption(1)
Module	CIMController
Parent	cimFeaturesAvailability
Next sibling	cimNaptOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of Datagram Compression Option

13.7.24 CIMNAPTOPTION

Name	cimNaptOption
OID	1.3.6.1.4.1.6247.4.2.5.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimNaptOption(2)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimDatagramCompressionOption
Next sibling	cimQosOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of NAPT Option

13.7.25 CIMQOSOPTION

Name	cimQosOption
OID	1.3.6.1.4.1.6247.4.2.5.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimQosOption(3)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimNaptOption
Next sibling	cimTcpAccelerationOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of QOS Option

13.7.26 CIMTCPACCELERATIONOPTION

Name	cimTcpAccelerationOption
OID	1.3.6.1.4.1.6247.4.2.5.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimTcpAccelerationOption(4)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimQosOption
Next sibling	cimTransparentBridgeOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of TCP Acceleration Option

13.7.27 CIMTRANSPARENTBRIDGEOPTION

Name	cimTransparentBridgeOption
OID	1.3.6.1.4.1.6247.4.2.5.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimTransparentBridgeOption(5)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimTcpAccelerationOption
Next sibling	cimEncryptionOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of Transparent Bridge Option

13.7.28 CIMENCRYPTIONOPTION

Name	cimEncryptionOption
OID	1.3.6.1.4.1.6247.4.2.5.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimEncryptionOption(6)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimTransparentBridgeOption
Next sibling	cimIgmpOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of Encryption Option

13.7.29 CIMIGMPOPTION

Name	cimIgmpOption
OID	1.3.6.1.4.1.6247.4.2.5.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimIgmpOption(7)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimEncryptionOption
Next sibling	cimHeaderCompressionOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of IGMP Option

13.7.30 cimHeaderCompressionOption

Name	cimHeaderCompressionOption
OID	1.3.6.1.4.1.6247.4.2.5.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesAvailability(5).cimHeaderCompressionOption(8)
Module	CIMController
Parent	cimFeaturesAvailability
Prev sibling	cimIgmpOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	Availability
Status	current
Max-access	read-only
Description	Availability of Header Compression Option

13.7.31 cimFeaturesConfig

Name	cimFeaturesConfig
OID	1.3.6.1.4.1.6247.4.2.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimFeaturesAvailability
Next sibling	cimDesEncryptConfig
Child	cimMidasFeature
Type	OBJECT-IDENTIFIER

13.7.32 cimMidasFeature

Name	cimMidasFeature
OID	1.3.6.1.4.1.6247.4.2.6.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimMidasFeature(1)
Module	CIMController
Parent	cimFeaturesConfig
Next sibling	cimTelnetFeature
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable MIDAS Feature

13.7.33 CIMTELNETFEATURE

Name	cimTelnetFeature
OID	1.3.6.1.4.1.6247.4.2.6.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimTelnetFeature(2)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimMidasFeature
Next sibling	cimPingResponseFeature
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable Telnet Access Feature

13.7.34 CIMPINGRESPONSEFEATURE

Name	cimPingResponseFeature
OID	1.3.6.1.4.1.6247.4.2.6.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimPingResponseFeature(3)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimTelnetFeature
Next sibling	cimDownlinkMulticastRoutingFeature
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable Respones to Ping Feature

13.7.35 CIMDOWNLINKMULTICASTROUTINGFEATURE

Name	cimDownlinkMulticastRoutingFeature
OID	1.3.6.1.4.1.6247.4.2.6.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimDownlinkMulticastRoutingFeature(4)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimPingResponseFeature
Next sibling	cimDatagramCompressionOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Multi-cast Routing Enable or Disable

13.7.36 CIMDATAGRAMCOMPRESSIONOPT

Name	cimDatagramCompressionOpt
OID	1.3.6.1.4.1.6247.4.2.6.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimDatagramCompressionOpt(5)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimDownlinkMulticastRoutingFeature
Next sibling	cimNaptOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable Datagram Compression Option

13.7.37 CIMNAPTOPT

Name	cimNaptOpt
OID	1.3.6.1.4.1.6247.4.2.6.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimNaptOpt(6)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimDatagramCompressionOpt
Next sibling	cimQosOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable NAPT Option

13.7.38 CIMQOSOPT

Name	cimQosOpt
OID	1.3.6.1.4.1.6247.4.2.6.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimQosOpt(7)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimNaptOpt
Next sibling	cimTcpAccelerationOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable QOS Option

13.7.39 CIMTCPACCELERATIONOPT

Name	cimTcpAccelerationOpt
OID	1.3.6.1.4.1.6247.4.2.6.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimTcpAccelerationOpt(8)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimQosOpt
Next sibling	cimTransparenetBridgeOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable TCP Acceleration Option

13.7.40 CIMTRANSPARENETBRIDGEOPT

Name	cimTransparenetBridgeOpt
OID	1.3.6.1.4.1.6247.4.2.6.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimTransparenetBridgeOpt(9)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimTcpAccelerationOpt
Next sibling	cimTransmitDesEncryptionOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable Transparent Bridging Option

13.7.41 cimTransmitDesEncryptionOpt

Name	cimTransmitDesEncryptionOpt
OID	1.3.6.1.4.1.6247.4.2.6.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimTransmitDesEncryptionOpt(10)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimTransparenetBridgeOpt
Next sibling	cimReceiveDesEncryptionOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Transmit DES Encryption Disable or Enable Option

13.7.42 cimReceiveDesEncryptionOpt

Name	cimReceiveDesEncryptionOpt
OID	1.3.6.1.4.1.6247.4.2.6.11
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimReceiveDesEncryptionOpt(11)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimTransmitDesEncryptionOpt
Next sibling	cimIgmpOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Receive DES Encryption Disable or Enable Option

13.7.43 CIMIGMPOPT

Name	cimIgmpOpt
OID	1.3.6.1.4.1.6247.4.2.6.12
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimIgmpOpt(12)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimReceiveDesEncryptionOpt
Next sibling	cimHeaderCompressionOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable IGMP Option

13.7.44 CIMHEADERCOMPRESSIONOPT

Name	cimHeaderCompressionOpt
OID	1.3.6.1.4.1.6247.4.2.6.13
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimFeaturesConfig(6).cimHeaderCompressionOpt(13)
Module	CIMController
Parent	cimFeaturesConfig
Prev sibling	cimIgmpOpt
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Disable or Enable Header Compression Option

13.7.45 CIMDESENCRYPTCONFIG

Name	cimDesEncryptConfig
OID	1.3.6.1.4.1.6247.4.2.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimFeaturesConfig
Next sibling	cimSmtp
Child	cimTransmitEncryptEnabled
Type	OBJECT-IDENTIFIER

13.7.46 CIMTRANSMITENCRYPTENABLED

Name	cimTransmitEncryptEnabled
OID	1.3.6.1.4.1.6247.4.2.7.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimTransmitEncryptEnabled(1)
Module	CIMController
Parent	cimDesEncryptConfig
Next sibling	cimReceiveDecryptEnabled
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Description	Transmit Encrypt Enable

13.7.47 CIMRECEIVEDECRYPTENABLED

Name	cimReceiveDecryptEnabled
OID	1.3.6.1.4.1.6247.4.2.7.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimReceiveDecryptEnabled(2)
Module	CIMController
Parent	cimDesEncryptConfig
Prev sibling	cimTransmitEncryptEnabled
Next sibling	cimTransmitKey1
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Max-access	read-write
Description	Receive Decrypt Enable

13.7.48 CIMTRANSMITKEY1

Name	cimTransmitKey1
OID	1.3.6.1.4.1.6247.4.2.7.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimTransmitKey1(3)
Module	CIMController
Parent	cimDesEncryptConfig
Prev sibling	cimReceiveDecryptEnabled
Next sibling	cimTransmitKey2
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..20
Description	Transmit Encrypt Key 1

13.7.49 CIMTRANSMITKEY2

Name	cimTransmitKey2
OID	1.3.6.1.4.1.6247.4.2.7.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimTransmitKey2(4)
Module	CIMController
Parent	cimDesEncryptConfig
Prev sibling	cimTransmitKey1
Next sibling	cimReceiveKey1
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..20
Description	Transmit Encrypt Key 2

13.7.50 CIMRECEIVEKEY1

Name	cimReceiveKey1
OID	1.3.6.1.4.1.6247.4.2.7.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimReceiveKey1(5)
Module	CIMController
Parent	cimDesEncryptConfig
Prev sibling	cimTransmitKey2
Next sibling	cimReceiveKey2
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..20
Description	Receive Decrypt Key 1

13.7.51 CIMRECEIVEKEY2

Name	cimReceiveKey2
OID	1.3.6.1.4.1.6247.4.2.7.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimDesEncryptConfig(7).cimReceiveKey2(6)
Module	CIMController
Parent	cimDesEncryptConfig
Prev sibling	cimReceiveKey1
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	1..20
Description	Receive Decrypt Key 2

13.7.52 CIMSMTP

Name	cimSmtp
OID	1.3.6.1.4.1.6247.4.2.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSmtp(8)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimDesEncryptConfig
Next sibling	cimSnmp
Child	cimSmtpServerIpAddress
Type	OBJECT-IDENTIFIER

13.7.53 CIMSMTPSERVERIPADDRESS

Name	cimSmtpServerIpAddress
OID	1.3.6.1.4.1.6247.4.2.8.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSmtp(8).cimSmtpServerIpAddress(1)
Module	CIMController
Parent	cimSmtp
Next sibling	cimSmtpDomain
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	SMTP Sever IP Address

13.7.54 CIMSMTPDOMAIN

Name	cimSmtpDomain
OID	1.3.6.1.4.1.6247.4.2.8.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSmtp(8).cimSmtpDomain(2)
Module	CIMController
Parent	cimSmtp
Prev sibling	cimSmtpServerIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..20
Description	SMTP Domain

13.7.55 CIMSMTPDESTINATIONNAME

Name	cimSmtpDestination
OID	1.3.6.1.4.1.6247.4.2.8.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSmtp(8).cimSmtpDestinationName(3)
Module	CIMController
Parent	cimSmtp
Prev sibling	cimSmtpServerDomain
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..20
Description	SMTP Destination Email User Name

13.7.56 CIMSNMP

Name	cimSnmp
OID	1.3.6.1.4.1.6247.4.2.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9)
Module	CIMController
Parent	cimAdministration
Prev sibling	cimSmtp
Child	cimSnmpTrapDestinationIpAddress
Type	OBJECT-IDENTIFIER

13.7.57 CIMSNMPTRAPDESTINATIONIPADDRESS

Name	cimSnmpTrapDestinationIpAddress
OID	1.3.6.1.4.1.6247.4.2.9.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9).cimSnmpTrapDestinationIpAddress(1)
Module	CIMController
Parent	cimSnmp
Next sibling	cimSnmpTrapCommunity
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	SNMP Trap Destination IP Address

13.7.58 CIMSNMPTRAPCOMMUNITY

Name	cimSnmpTrapCommunity
OID	1.3.6.1.4.1.6247.4.2.9.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9).cimSnmpTrapCommunity(2)
Module	CIMController
Parent	cimSnmp
Prev sibling	cimSnmpTrapDestinationIpAddress
Next sibling	cimSnmpTrapVersion
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..20
Description	SNMP Trap Community

13.7.59 CIMSNMPTRAPVERSION

Name	cimSnmpTrapVersion
OID	1.3.6.1.4.1.6247.4.2.9.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9).cimSnmpTrapVersion(3)
Module	CIMController
Parent	cimSnmp
Prev sibling	cimSnmpTrapCommunity
Next sibling	cimSnmpAuthenticationFailureCommunity
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	snmpV1(1)
2	snmpV2(2)
Description	SNMP Trap Version

13.7.60 CIMSNMPAUTHENTICATIONFAILURECOMMUNITY

Name	cimSnmpAuthenticationFailureCommunity
OID	1.3.6.1.4.1.6247.4.2.9.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9).cimSnmpAuthenticationFailureCommunity(4)
Module	CIMController
Parent	cimSnmp
Prev sibling	cimSnmpTrapVersion
Next sibling	cimSnmpAuthenticationFailureAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Size list	
1	0..20
Description	Failed Community String

13.7.61 CIMSNMPAUTHENTICATIONFAILUREADDRESS

Name	cimSnmpAuthenticationFailureAddress
OID	1.3.6.1.4.1.6247.4.2.9.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimAdministration(2).cimSnmp(9).cimSnmpAuthenticationFailureAddress(5)
Module	CIMController
Parent	cimSnmp
Prev sibling	cimSnmpAuthenticationFailureCommunity
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Description	Address that send failed community string

13.7.62 CIMINTERFACES

Name	cimInterfaces
OID	1.3.6.1.4.1.6247.4.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3)
Module	CIMController
Parent	cimController
Prev sibling	cimAdministration
Next sibling	cimRouteTable
Child	cimEthernetInterface
Type	OBJECT-IDENTIFIER

13.7.63 CIMETHERNETINTERFACE

Name	cimEthernetInterface
OID	1.3.6.1.4.1.6247.4.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimEthernetInterface(1)
Module	CIMController
Parent	cimInterfaces
Next sibling	cimSatelliteInterface
Child	cimEthernetMacAddress
Type	OBJECT-IDENTIFIER

13.7.64 CIMETHERNETMACADDRESS

Name	cimEthernetMacAddress
OID	1.3.6.1.4.1.6247.4.3.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimEthernetInterface(1).cimEthernetMacAddress(1)
Module	CIMController
Parent	cimEthernetInterface
Next sibling	cimEthernetSpeed
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	12
Description	Ethernet MAC Address

13.7.65 CIMETHERNETSPEED

Name	cimEthernetSpeed
OID	1.3.6.1.4.1.6247.4.3.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimEthernetInterface(1).cimEthernetSpeed(2)
Module	CIMController
Parent	cimEthernetInterface
Prev sibling	cimEthernetMacAddress
Next sibling	cimEthernetIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	auto(1)
2	halfDuplex10M(2)
3	halfDuplex100M(3)
4	fullDuplex10M(4)
5	fullDuplex100M(5)
Description	Ethernet Speed Mode

13.7.66 CIMETHERNETIPADDRESS

Name	cimEthernetIpAddress
OID	1.3.6.1.4.1.6247.4.3.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimEthernetInterface(1).cimEthernetIpAddress(3)
Module	CIMController
Parent	cimEthernetInterface
Prev sibling	cimEthernetSpeed
Next sibling	cimEthernetSubnetPrefixLen
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Ethernet IP Address

13.7.67 CIMETHERNETSUBNETPREFIXLEN

Name	cimEthernetSubnetPrefixLen
OID	1.3.6.1.4.1.6247.4.3.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimEthernetInterface(1).cimEthernetSubnetPrefixLen(4)
Module	CIMController
Parent	cimEthernetInterface
Prev sibling	cimEthernetIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	8..30
Description	Number of set bits in the Ethernet Subnet Mask

13.7.68 CIMSATELLITEINTERFACE

Name	cimSatelliteInterface
OID	1.3.6.1.4.1.6247.4.3.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2)
Module	CIMController
Parent	cimInterfaces
Prev sibling	cimEthernetInterface
Child	cimSatelliteIpAddress
Type	OBJECT-IDENTIFIER

13.7.69 CIMSATELLITEIPADDRESS

Name	cimSatelliteIpAddress
OID	1.3.6.1.4.1.6247.4.3.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteIpAddress(1)
Module	CIMController
Parent	cimSatelliteInterface
Next sibling	cimSatelliteSubnetPrefixLen
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Satellite IP Address

13.7.70 CIMSATELLITESUBNETPREFIXLEN

Name	cimSatelliteSubnetPrefixLen
OID	1.3.6.1.4.1.6247.4.3.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteSubnetPrefixLen(2)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteIpAddress
Next sibling	cimSatelliteReceiveEnable
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	8..30
Description	Number of bits in the Satellite Subnet Mask

13.7.71 CIMSATELLITERECEIVEENABLE

Name	cimSatelliteReceiveEnable
OID	1.3.6.1.4.1.6247.4.3.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteReceiveEnable(3)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteSubnetPrefixLen
Next sibling	cimSatelliteTransmitEnable
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Satellite Recieve Enable

13.7.72 CIMSATELLITETRANSMITENABLE

Name	cimSatelliteTransmitEnable
OID	1.3.6.1.4.1.6247.4.3.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteTransmitEnable(4)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteReceiveEnable
Next sibling	cimSatelliteHdlcAddress1
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Satellite Transmit Enable

13.7.73 CIMSATELLITEHDLCADDRESS1

Name	cimSatelliteHdlcAddress1
OID	1.3.6.1.4.1.6247.4.3.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteHdlcAddress1(5)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteTransmitEnable
Next sibling	cimSatelliteHdlcAddress2
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-1
2	1..65535
Description	HDLC Channel Address #1 filtered by the HSR Setting a value of -1 or 65535 (i.e. 0xffff) deletes the address.

13.7.74 CIMSATELLITEHDLCADDRESS2

Name	cimSatelliteHdlcAddress2
OID	1.3.6.1.4.1.6247.4.3.2.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteHdlcAddress2(6)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteHdlcAddress1
Next sibling	cimSatelliteHdlcAddress3
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-1
2	1..65535
Description	HDLC Channel Address #2 filtered by the HSR Setting a value of -1 or 65535 (i.e. 0xffff) deletes the address.

13.7.75 CIMSATELLITEHDLCADDRESS3

Name	cimSatelliteHdlcAddress3
OID	1.3.6.1.4.1.6247.4.3.2.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteHdlcAddress3(7)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteHdlcAddress2
Next sibling	cimSatelliteHdlcAddress4
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-1
2	1..65535
Description	HDLC Channel Address #3 filtered by the HSR Setting a value of -1 or 65535 (i.e. 0xffff) deletes the address.

13.7.76 CIMSATELLITEHDLCADDRESS4

Name	cimSatelliteHdlcAddress4
OID	1.3.6.1.4.1.6247.4.3.2.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimInterfaces(3).cimSatelliteInterface(2).cimSatelliteHdlcAddress4(8)
Module	CIMController
Parent	cimSatelliteInterface
Prev sibling	cimSatelliteHdlcAddress3
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-1
2	1..65535
Description	HDLC Channel Address #4 filtered by the HSR Setting a value of -1 or 65535 (i.e. 0xffff) deletes the address.

13.7.77 CIMROUTETABLE

Name	cimRouteTable
OID	1.3.6.1.4.1.6247.4.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4)
Module	CIMController
Parent	cimController
Prev sibling	cimInterfaces
Next sibling	cimProtocols
Child	cimGlobalQosEnable
Type	OBJECT-IDENTIFIER

13.7.78 CIMGLOBALQOSENABLE

Name	cimGlobalQosEnable
OID	1.3.6.1.4.1.6247.4.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimGlobalQosEnable(1)
Module	CIMController
Parent	cimRouteTable
Next sibling	cimIpRouteTable
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-only
Description	Enable / Disable Quality of Service (QOS)

13.7.79 CIMIPROUTETABLE

Name	cimIpRouteTable
OID	1.3.6.1.4.1.6247.4.4.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3)
Module	CIMController
Parent	cimRouteTable
Prev sibling	cimGlobalQosEnable
Child	cimIpRouteEntry
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_SEQUENCE
Base syntax	SEQUENCE OF CimIpRouteEntry
Composed syntax	SEQUENCE OF CimIpRouteEntry
Status	current
Max-access	not-accessible
Description	CIM IP Route Table

13.7.80 CIMIPROUTEENTRY

Name	cimIpRouteEntry
OID	1.3.6.1.4.1.6247.4.4.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1)
Module	CIMController
Parent	cimIpRouteTable
Child	cimIpRouteIndex
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_NULL
Base syntax	CimIpRouteEntry
Composed syntax	CimIpRouteEntry
Status	current
Max-access	not-accessible
Sequences	
1	cimIpRouteIndex - INTEGER(2 - int, int32)
2	cimIpRouteName - DisplayString(4 - octets)
3	cimIpRouteDestAddress - IpAddress(64 - ipaddr)
4	cimIpRouteDestMaskLen - INTEGER(2 - int, int32)
5	cimIpRouteNextHopAddress - IpAddress(64 - ipaddr)
6	cimIpRouteMulticastOptions - INTEGER(2 - int, int32)
7	cimIpRouteMinQosBandwidth - INTEGER(2 - int, int32)
8	cimIpRouteMaxQosBandwidth - INTEGER(2 - int, int32)
9	cimIpRouteDesKey - INTEGER(2 - int, int32)
10	cimIpRouteRowStatus - INTEGER(2 - int, int32)
Indexes	
1	cimIpRouteIndex
Description	CIM IP Route Entry

13.7.81 CIMIPROUTEINDEX

Name	cimIpRouteIndex
OID	1.3.6.1.4.1.6247.4.4.3.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteIndex(1)
Module	CIMController
Parent	cimIpRouteEntry
Next sibling	cimIpRouteName
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..1024
Description	Route Table Index

13.7.82 CIMIPROUTENAME

Name	cimIpRouteName
OID	1.3.6.1.4.1.6247.4.4.3.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteName(2)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteIndex
Next sibling	cimIpRouteDestAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..14
Description	Route Name

13.7.83 CIMIPROUTEDESTADDRESS

Name	cimIpRouteDestAddress
OID	1.3.6.1.4.1.6247.4.4.3.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteDestAddress(3)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteName
Next sibling	cimIpRouteDestMaskLen
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Destination IP Address for Route

13.7.84 CIMIPROUTEDESTMASKLEN

Name	cimIpRouteDestMaskLen
OID	1.3.6.1.4.1.6247.4.4.3.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteDestMaskLen(4)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteDestAddress
Next sibling	cimIpRouteNextHopAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..32
Description	Number of bits in the subnet mask for the Destination IP Address

13.7.85 CIMIPROUTENEXTHOPADDRESS

Name	cimIpRouteNextHopAddress
OID	1.3.6.1.4.1.6247.4.4.3.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteNextHopAddress(5)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteDestMaskLen
Next sibling	cimIpRouteMulticastOptions
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Next Hop IP Address

13.7.86 CIMIPROUTEMULTICASTOPTIONS

Name	cimIpRouteMulticastOptions
OID	1.3.6.1.4.1.6247.4.4.3.1.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteMulticastOptions(6)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteNextHopAddress
Next sibling	cimIpRouteMinQosBandwidth
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	noRouting(1)
2	ethToSatRouting(2)
3	satToEthRouting(3)
4	satToEthAndEthToSatRouting(4)
Default values	
1	1 (int)
Description	Multicast Routing Options

13.7.87 CIMIPROUTEMINQOSBANDWIDTH

Name	cimIpRouteMinQosBandwidth
OID	1.3.6.1.4.1.6247.4.4.3.1.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteMinQosBandwidth(7)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteMulticastOptions
Next sibling	cimIpRouteMaxQosBandwidth
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..999999999
Default values	
1	0 (int)
Description	Minimum bandwidth

13.7.88 CIMIPROUTEMAXQOSBANDWIDTH

Name	cimIpRouteMaxQosBandwidth
OID	1.3.6.1.4.1.6247.4.4.3.1.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteMaxQosBandwidth(8)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteMinQosBandwidth
Next sibling	cimIpRouteDesKey
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..999999999
Default values	
1	0 (int)
Description	Maximum bandwidth

13.7.89 CIMIPROUTEDESKEY

Name	cimIpRouteDesKey
OID	1.3.6.1.4.1.6247.4.4.3.1.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteDesKey(9)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteMaxQosBandwidth
Next sibling	cimIpRouteRowStatus
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	clear(1)
2	key1(2)
3	key2(3)
4	random(4)
Default values	
1	1 (int)
Description	Picks which DES key to use for this flow.

13.7.90 CIMIPROUTEROWSTATUS

Name	cimIpRouteRowStatus
OID	1.3.6.1.4.1.6247.4.4.3.1.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRouteRowStatus(10)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteDesKey
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	active(1)
2	notInService(2)
3	notReady(3)
4	createAndGo(4)
5	createAndWait(5)
6	destroy(6)
Description	In SMIv2 tables, the RowStatus textual convention is used to manage the creation and deletion of conceptual rows. This column has six defined values: active(1) - which indicates that the conceptual row with all column is available for use by the managed device notInService(2) - this row state is not yet supported notReady(3) - this row state is not yet supported createAndGo(4) - which is supplied by a manager wishing to create a new instance of a conceptual row and to have its status automatically set to active, making it available for use by the managed device. createAndWait(5) - this row create is not yet supported destroy(6) - which is supplied by a manager wishing to delete all of the instances associated with an existing conceptual row.

13.7.91 CIMIPROUTEPRIORITY

Name	cimIpRoutePriority
OID	1.3.6.1.4.1.6247.4.4.3.1.11
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRouteTable(4).cimIpRouteTable(3).cimIpRouteEntry(1).cimIpRoutePriority(11)
Module	CIMController
Parent	cimIpRouteEntry
Prev sibling	cimIpRouteRowStatus
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	Integer32
Composed syntax	Integer32
Status	current
Max-access	read-write
Size list	
1	1..2
Description	Route QoS Priority

13.7.92 CIMPROTOCOLS

Name	cimProtocols
OID	1.3.6.1.4.1.6247.4.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5)
Module	CIMController
Parent	cimController
Prev sibling	cimRouteTable
Next sibling	cimRedundancy
Child	cimIgmpConfig
Type	OBJECT-IDENTIFIER

13.7.93 CIMIGMPCONFIG

Name	cimIgmpConfig
OID	1.3.6.1.4.1.6247.4.5.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1)
Module	CIMController
Parent	cimProtocols
Next sibling	cimArpConfig
Child	cimIgmpTable
Type	OBJECT-IDENTIFIER

13.7.94 CIMIGMPTABLE

Name	cimIgmpTable
OID	1.3.6.1.4.1.6247.4.5.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1)
Module	CIMController
Parent	cimIgmpConfig
Next sibling	cimIgmpReceiver
Child	cimIgmpEntry
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_SEQUENCE
Base syntax	SEQUENCE OF CimIgmpEntry
Composed syntax	SEQUENCE OF CimIgmpEntry
Status	current
Max-access	not-accessible
Description	IGMP Table

13.7.95 CIMIGMPENTRY

Name	cimIgmpEntry
OID	1.3.6.1.4.1.6247.4.5.1.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1)
Module	CIMController
Parent	cimIgmpTable
Child	cimIgmpIndex
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_NULL
Base syntax	CimIgmpEntry
Composed syntax	CimIgmpEntry
Status	current
Max-access	not-accessible
Sequences	
1	cimIgmpIndex - INTEGER(2 - int, int32)
2	cimIgmpTTL - INTEGER(2 - int, int32)
3	cimIgmpClientState - INTEGER(2 - int, int32)
4	cimIgmpSrc - INTEGER(2 - int, int32)
5	cimIgmpGroupIpAddress - IpAddress(64 - ipaddr)
Indexes	
1	cimIgmpIndex
Description	IGMP Entry

13.7.96 CIMIGMPINDEX

Name	cimIgmpIndex
OID	1.3.6.1.4.1.6247.4.5.1.1.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1).cimIgmpIndex(1)
Module	CIMController
Parent	cimIgmpEntry
Next sibling	cimIgmpTTL
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	1..256
Description	IGMP Table Index

13.7.97 CIMIGMPTTL

Name	cimIgmpTTL
OID	1.3.6.1.4.1.6247.4.5.1.1.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1).cimIgmpTTL(2)
Module	CIMController
Parent	cimIgmpEntry
Prev sibling	cimIgmpIndex
Next sibling	cimIgmpClientState
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..255
Description	IGMP Time to live (TTL)

13.7.98 CIMIGMPCLIENTSTATE

Name	cimIgmpClientState
OID	1.3.6.1.4.1.6247.4.5.1.1.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1).cimIgmpClientState(3)
Module	CIMController
Parent	cimIgmpEntry
Prev sibling	cimIgmpTTL
Next sibling	cimIgmpSrc
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	idle(1)
2	active(2)
3	closing(3)
Description	IGMP Client State

13.7.99 CIMIGMPSRC

Name	cimIgmpSrc
OID	1.3.6.1.4.1.6247.4.5.1.1.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1).cimIgmpSrc(4)
Module	CIMController
Parent	cimIgmpEntry
Prev sibling	cimIgmpClientState
Next sibling	cimIgmpGroupIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	other(1)
2	sat(2)
Description	IGMP Source

13.7.100 CIMIGMPGROUPIPADDRESS

Name	cimIgmpGroupIpAddress
OID	1.3.6.1.4.1.6247.4.5.1.1.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTable(1).cimIgmpEntry(1).cimIgmpGroupIpAddress(5)
Module	CIMController
Parent	cimIgmpEntry
Prev sibling	cimIgmpSrc
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-only
Description	IGMP Group IP Address

13.7.101 CIMIGMPRECEIVER

Name	cimIgmpReceiver
OID	1.3.6.1.4.1.6247.4.5.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpReceiver(2)
Module	CIMController
Parent	cimIgmpConfig
Prev sibling	cimIgmpTable
Next sibling	cimIgmpTransmiter
Child	cimIgmpEnable
Type	OBJECT-IDENTIFIER

13.7.102 CIMIGMPENABLE

Name	cimIgmpEnable
OID	1.3.6.1.4.1.6247.4.5.1.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpReceiver(2).cimIgmpEnable(1)
Module	CIMController
Parent	cimIgmpReceiver
Next sibling	cimIgmpQueryPeriod
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	True means IGMP is enabled, false means IGMP is disabled

13.7.103 CIMIGMPQUERYPERIOD

Name	cimIgmpQueryPeriod
OID	1.3.6.1.4.1.6247.4.5.1.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpReceiver(2).cimIgmpQueryPeriod(2)
Module	CIMController
Parent	cimIgmpReceiver
Prev sibling	cimIgmpEnable
Next sibling	cimIgmpMaxRespTime
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..600
Description	IGMP Query Period

13.7.104 CIMIGMPMAXRESPTIME

Name	cimIgmpMaxRespTime
OID	1.3.6.1.4.1.6247.4.5.1.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpReceiver(2).cimIgmpMaxRespTime(3)
Module	CIMController
Parent	cimIgmpReceiver
Prev sibling	cimIgmpQueryPeriod
Next sibling	cimIgmpMaxMissBeforeDrop
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..600
Description	IGMP Max Response Time

13.7.105 CIMIGMPMAXMISSBEFOREDROP

Name	cimIgmpMaxMissBeforeDrop
OID	1.3.6.1.4.1.6247.4.5.1.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpReceiver(2).cimIgmpMaxMissBeforeDrop(4)
Module	CIMController
Parent	cimIgmpReceiver
Prev sibling	cimIgmpMaxRespTime
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..30
Description	Max missed responses from a Report before dropping

13.7.106 CIMIGMPTRANSMITER

Name	cimIgmpTransmiter
OID	1.3.6.1.4.1.6247.4.5.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTransmiter(3)
Module	CIMController
Parent	cimIgmpConfig
Prev sibling	cimIgmpReceiver
Child	cimIgmpRecognizeQueries
Type	OBJECT-IDENTIFIER

13.7.107 CIMIGMPRECOGNIZEQUERIES

Name	cimIgmpRecognizeQueries
OID	1.3.6.1.4.1.6247.4.5.1.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTransmiter(3).cimIgmpRecognizeQueries(1)
Module	CIMController
Parent	cimIgmpTransmiter
Next sibling	cimIgmpVersionUnsolicitedReports
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Recognize IGMP Queries

13.7.108 CIMIGMPVERSIONUNSOLICITEDREPORTS

Name	cimIgmpVersionUnsolicitedReports
OID	1.3.6.1.4.1.6247.4.5.1.3.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTransmiter(3).cimIgmpVersionUnsolicitedReports(2)
Module	CIMController
Parent	cimIgmpTransmiter
Prev sibling	cimIgmpRecognizeQueries
Next sibling	cimIgmpForceAlertOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	v1(1)
2	v2(2)
Description	IGMP Version used for Unsolicited Reports v1 or v2

13.7.109 CIMIGMPFORCEALERTOPTION

Name	cimIgmpForceAlertOption
OID	1.3.6.1.4.1.6247.4.5.1.3.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTransmiter(3).cimIgmpForceAlertOption(3)
Module	CIMController
Parent	cimIgmpTransmiter
Prev sibling	cimIgmpVersionUnsolicitedReports
Next sibling	cimIgmpUnsolicitedReportInterval
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	EnableDisable
Status	current
Max-access	read-write
Description	Force Cisco Router Alert Option sending V1 reports

13.7.110 CIMIGMPUNSOLICITEDREPORTINTERVAL

Name	cimIgmpUnsolicitedReportInterval
OID	1.3.6.1.4.1.6247.4.5.1.3.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimIgmpConfig(1).cimIgmpTransmiter(3).cimIgmpUnsolicitedReportInterval(4)
Module	CIMController
Parent	cimIgmpTransmiter
Prev sibling	cimIgmpForceAlertOption
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..25
Description	Unsolicited Report Interval, sec

13.7.111 CIMARPCONFIG

Name	cimArpConfig
OID	1.3.6.1.4.1.6247.4.5.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2)
Module	CIMController
Parent	cimProtocols
Prev sibling	cimIgmpConfig
Child	cimFlushArpTable
Type	OBJECT-IDENTIFIER

13.7.112 CIMFLUSHARPTABLE

Name	cimFlushArpTable
OID	1.3.6.1.4.1.6247.4.5.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimFlushArpTable(1)
Module	CIMController
Parent	cimArpConfig
Next sibling	cimArpTable
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Max-access	read-write
Description	True flushes the non-static arp table.

13.7.113 CIMARPTABLE

Name	cimArpTable
OID	1.3.6.1.4.1.6247.4.5.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2)
Module	CIMController
Parent	cimArpConfig
Prev sibling	cimFlushArpTable
Child	cimArpEntry
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_SEQUENCE
Base syntax	SEQUENCE OF CimArpEntry
Composed syntax	SEQUENCE OF CimArpEntry
Status	current
Max-access	not-accessible
Description	CIM ARP Table

13.7.114 CIMARPENTRY

Name	cimArpEntry
OID	1.3.6.1.4.1.6247.4.5.2.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1)
Module	CIMController
Parent	cimArpTable
Child	cimArpIndex
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_NULL
Base syntax	CimArpEntry
Composed syntax	CimArpEntry
Status	current
Max-access	not-accessible
Sequences	
1	cimArpIndex - INTEGER(2 - int, int32)
2	cimArpIpAddress - IpAddress(64 - ipaddr)
3	cimArpPhysAddress - DisplayString(4 - octets)
4	cimArpPhysType - INTEGER(2 - int, int32)
5	cimArpRowStatus - INTEGER(2 - int, int32)
Indexes	
1	cimArpIndex
Description	CIM ARP Entry

13.7.115 CIMARPINDEX

Name	cimArpIndex
OID	1.3.6.1.4.1.6247.4.5.2.2.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1).cimArpIndex(1)
Module	CIMController
Parent	cimArpEntry
Next sibling	cimArpIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..256
Description	ARP Table Index

13.7.116 CIMARPIPADDRESS

Name	cimArpIpAddress
OID	1.3.6.1.4.1.6247.4.5.2.2.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1).cimArpIpAddress(2)
Module	CIMController
Parent	cimArpEntry
Prev sibling	cimArpIndex
Next sibling	cimArpPhysAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	IP Address to be statically mapped to a Physical Address

13.7.117 CIMARPPHYSADDRESS

Name	cimArpPhysAddress
OID	1.3.6.1.4.1.6247.4.5.2.2.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1).cimArpPhysAddress(3)
Module	CIMController
Parent	cimArpEntry
Prev sibling	cimArpIpAddress
Next sibling	cimArpPhysType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..20
Description	Ethernet MAC or HDLC address associated with an IP Address

13.7.118 CIMARPPHYSTYPE

Name	cimArpPhysType
OID	1.3.6.1.4.1.6247.4.5.2.2.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1).cimArpPhysType(4)
Module	CIMController
Parent	cimArpEntry
Prev sibling	cimArpPhysAddress
Next sibling	cimArpRowStatus
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	ipToMac(1)
2	ipToHdlc(2)
Description	Either Ethernet MAC or Satellite HDLC Address Entry Type

13.7.119 CIMARPROWSTATUS

Name	cimArpRowStatus
OID	1.3.6.1.4.1.6247.4.5.2.2.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimProtocols(5).cimArpConfig(2).cimArpTable(2).cimArpEntry(1).cimArpRowStatus(5)
Module	CIMController
Parent	cimArpEntry
Prev sibling	cimArpPhysType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	active(1)
2	notInService(2)
3	notReady(3)
4	createAndGo(4)
5	createAndWait(5)
6	destroy(6)
Description	In SMIv2 tables, the RowStatus textual convention is used to manage the creation and deletion of conceptual rows. This column has six defined values. active(1) - which indicates that the conceptual row with all column is available for use by the managed device notInService(2) - this row status is not yet supported notReady(3) - this row status is not yet supported createAndGo(4) - which is supplied by a manager wishing to create a new instance of a conceptual row and to have its status automatically set to active, making it available for use by the managed device. createAndWait(5) - this row create operationg is not yet supported destroy(6) - which is supplied by a manager wishing to delete all of the instances associated with an existing conceptual row.

13.7.120 CIMREDUNDANCY

Name	cimRedundancy
OID	1.3.6.1.4.1.6247.4.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6)
Module	CIMController
Parent	cimController
Prev sibling	cimProtocols
Next sibling	cimOperMaint
Child	cimCurrentRedundantState
Type	OBJECT-IDENTIFIER

13.7.121 CIMCURRENTREDUNDANTSTATE

Name	cimCurrentRedundantState
OID	1.3.6.1.4.1.6247.4.6.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimCurrentRedundantState(1)
Module	CIMController
Parent	cimRedundancy
Next sibling	cimLocalUnitManagementIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	offLine(0)
2	onLine(1)
Description	Current State = OffLine or OnLine

13.7.122 CIMLOCALUNITMANAGEMENTIPADDRESS

Name	cimLocalUnitManagementIpAddress
OID	1.3.6.1.4.1.6247.4.6.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimLocalUnitManagementIpAddress(2)
Module	CIMController
Parent	cimRedundancy
Prev sibling	cimCurrentRedundantState
Next sibling	cimRedundantUnitManagementIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-only
Description	Local Unit Management IP Address

13.7.123 CIMREDUNDANTUNITMANAGEMENTIPADDRESS

Name	cimRedundantUnitManagementIpAddress
OID	1.3.6.1.4.1.6247.4.6.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimRedundantUnitManagementIpAddress(3)
Module	CIMController
Parent	cimRedundancy
Prev sibling	cimLocalUnitManagementIpAddress
Next sibling	cimRedundantTrafficIpAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-only
Description	Redundant Unit Management IP Address

13.7.124 CIMREDUNDANTTRAFFICIPADDRESS

Name	cimRedundantTrafficIpAddress
OID	1.3.6.1.4.1.6247.4.6.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimRedundantTrafficIpAddress(4)
Module	CIMController
Parent	cimRedundancy
Prev sibling	cimRedundantUnitManagementIpAddress
Next sibling	cimRedundantTrafficSubnetMaskLen
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_IPADDR
Base syntax	IpAddress
Composed syntax	IpAddress
Status	current
Max-access	read-write
Description	Redundant Traffic IP Address

13.7.125 CIMREDUNDANTTRAFFICSUBNETMASKLEN

Name	cimRedundantTrafficSubnetMaskLen
OID	1.3.6.1.4.1.6247.4.6.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimRedundantTrafficSubnetMaskLen(5)
Module	CIMController
Parent	cimRedundancy
Prev sibling	cimRedundantTrafficIpAddress
Next sibling	cimForceUnitOffline
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	8..32
Description	Redundant Traffic Subnet Mask Length

13.7.126 cimForceUnitOffline

Name	cimForceUnitOffline
OID	1.3.6.1.4.1.6247.4.6.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimRedundancy(6).cimForceUnitOffline(6)
Module	CIMController
Parent	cimRedundancy
Prev sibling	cimRedundantTrafficSubnetMaskLen
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Max-access	read-write
Description	Force Unit Offline

13.7.127 cimOperMaint

Name	cimOperMaint
OID	1.3.6.1.4.1.6247.4.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7)
Module	CIMController
Parent	cimController
Prev sibling	cimRedundancy
Next sibling	cimStatistics
Child	cimAppVersion
Type	OBJECT-IDENTIFIER

13.7.128 CIMAPPVERSION

Name	cimAppVersion
OID	1.3.6.1.4.1.6247.4.7.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimAppVersion(1)
Module	CIMController
Parent	cimOperMaint
Next sibling	cimSaveConfiguration
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	1..30
Description	Version numbers for Application and FPGA

13.7.129 CIMSAVECONFIGURATION

Name	cimSaveConfiguration
OID	1.3.6.1.4.1.6247.4.7.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimSaveConfiguration(2)
Module	CIMController
Parent	cimOperMaint
Prev sibling	cimAppVersion
Next sibling	cimReset
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	TrueFalse
Status	current
Max-access	read-write
Description	Save Configuration. Setting to True saves the configuration to permanent storage.

13.7.130 CIMRESET

Name	cimReset
OID	1.3.6.1.4.1.6247.4.7.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimReset(3)
Module	CIMController
Parent	cimOperMaint
Prev sibling	cimSaveConfiguration
Next sibling	cimRemotePortBConfig
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	TrueFalse
Status	current
Max-access	read-write
Description	If Set to True will reset the unit

13.7.131 CIMREMOTEPORTBCONFIG

Name	cimRemotePortBConfig
OID	1.3.6.1.4.1.6247.4.7.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimRemotePortBConfig(4)
Module	CIMController
Parent	cimOperMaint
Prev sibling	cimReset
Child	cimRemotePortBDeviceAddress
Type	OBJECT-IDENTIFIER

13.7.132 CIMREMOTEPORTBDEVICEADDRESS

Name	cimRemotePortBDeviceAddress
OID	1.3.6.1.4.1.6247.4.7.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimRemotePortBConfig(4).cimRemotePortBDeviceAddress(1)
Module	CIMController
Parent	cimRemotePortBConfig
Next sibling	cimRemotePortBBaudRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..9999
Description	Remote Control device Address

13.7.133 CIMREMOTEPORTBBAUDRATE

Name	cimRemotePortBBaudRate
OID	1.3.6.1.4.1.6247.4.7.4.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimRemotePortBConfig(4).cimRemotePortBBaudRate(2)
Module	CIMController
Parent	cimRemotePortBConfig
Prev sibling	cimRemotePortBDeviceAddress
Next sibling	cimRemotePortBFormat
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	bps1200(1)
2	bps2400(2)
3	bps4800(3)
4	bps9600(4)
5	bps19200(5)
6	bps38400(6)
Description	Baud Rate for the Remote control Serial port

13.7.134 CIMREMOTEPORTBFORMAT

Name	cimRemotePortBFormat
OID	1.3.6.1.4.1.6247.4.7.4.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimRemotePortBConfig(4).cimRemotePortBFormat(3)
Module	CIMController
Parent	cimRemotePortBConfig
Prev sibling	cimRemotePortBBaudRate
Next sibling	cimRemotePortBInterface
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	format8N1(1)
2	format7E2(2)
3	format7O2(3)
Description	Data bits for the Remote Control serial port

13.7.135 CIMREMOTEPORTBINTERFACE

Name	cimRemotePortBInterface
OID	1.3.6.1.4.1.6247.4.7.4.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimOperMaint(7).cimRemotePortBConfig(4).cimRemotePortBInterface(4)
Module	CIMController
Parent	cimRemotePortBConfig
Prev sibling	cimRemotePortBFormat
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	EIA-232(1)
2	rs4852w(2)
3	rs4854w(3)
Description	Remote control interface type.

13.7.136 CIMSTATISTICS

Name	cimStatistics
OID	1.3.6.1.4.1.6247.4.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8)
Module	CIMController
Parent	cimController
Prev sibling	cimOperMaint
Child	cimSatelliteTransmitStatistics
Type	OBJECT-IDENTIFIER

13.7.137 CIMSATELLITETRANSMITSTATISTICS

Name	cimSatelliteTransmitStatistics
OID	1.3.6.1.4.1.6247.4.8.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1)
Module	CIMController
Parent	cimStatistics
Next sibling	cimIpRoutingStatistics
Child	cimSatelliteTransmitTable
Type	OBJECT-IDENTIFIER

13.7.138 CIMSATELLITETRANSMITTABLE

Name	cimSatelliteTransmitTable
OID	1.3.6.1.4.1.6247.4.8.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1)
Module	CIMController
Parent	cimSatelliteTransmitStatistics
Child	cimSatelliteTransmitEntry
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_SEQUENCE
Base syntax	SEQUENCE OF CimSatelliteTransmitEntry
Composed syntax	SEQUENCE OF CimSatelliteTransmitEntry
Status	current
Max-access	not-accessible
Description	Satellite transmit Table

13.7.139 CIMSATELLITETRANSMITENTRY

Name	cimSatelliteTransmitEntry
OID	1.3.6.1.4.1.6247.4.8.1.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1)
Module	CIMController
Parent	cimSatelliteTransmitTable
Child	cimSatelliteTransmitIndex
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_NULL
Base syntax	CimSatelliteTransmitEntry
Composed syntax	CimSatelliteTransmitEntry
Status	current
Max-access	not-accessible
Sequences	
1	cimSatelliteTransmitIndex - Integer32(2 - int, int32)
2	cimSatelliteTransmitRouteName - DisplayString(4 - octets)
3	cimSatelliteTransmitTotalPacketsTransmitted - Counter32(65 - cntr32)
4	cimSatelliteTransmitTotalPacketsDropped - Counter32(65 - cntr32)
5	cimSatelliteTransmitMinDataRate - INTEGER(2 - int, int32)
6	cimSatelliteTransmitMaxDataRate - INTEGER(2 - int, int32)
7	cimSatelliteTransmitAvgDataRate - INTEGER(2 - int, int32)
Indexes	
1	cimSatelliteTransmitIndex
Description	Satellite Transmit Entry

13.7.140 CIMSATELLITETRANSMITINDEX

Name	cimSatelliteTransmitIndex
OID	1.3.6.1.4.1.6247.4.8.1.1.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitIndex(1)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Next sibling	cimSatelliteTransmitRouteName
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	Integer32
Composed syntax	Integer32
Status	current
Max-access	read-only
Size list	
1	1..1024
Description	Route Statistsics Index

13.7.141 CIMSATELLITETRANSMITROUTENAME

Name	cimSatelliteTransmitRouteName
OID	1.3.6.1.4.1.6247.4.8.1.1.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitRouteName(2)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitIndex
Next sibling	cimSatelliteTransmitTotalPacketsTransmitted
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Description	Route Statistics Name

13.7.142 cimSatelliteTransmitTotalPacketsTransmitted

Name	cimSatelliteTransmitTotalPacketsTransmitted
OID	1.3.6.1.4.1.6247.4.8.1.1.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitTotalPacketsTransmitted(3)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitRouteName
Next sibling	cimSatelliteTransmitTotalPacketsDropped
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Total Number of Packets Transmitted

13.7.143 cimSatelliteTransmitTotalPacketsDropped

Name	cimSatelliteTransmitTotalPacketsDropped
OID	1.3.6.1.4.1.6247.4.8.1.1.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitTotalPacketsDropped(4)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitTotalPacketsTransmitted
Next sibling	cimSatelliteTransmitMinDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Total Number of Packets Dropped

13.7.144 cimSatelliteTransmitMinDataRate

Name	cimSatelliteTransmitMinDataRate
OID	1.3.6.1.4.1.6247.4.8.1.1.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitMinDataRate(5)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitTotalPacketsDropped
Next sibling	cimSatelliteTransmitMaxDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..999999999
Description	Minimum Rate (Bits Per Second)

13.7.145 cimSatelliteTransmitMaxDataRate

Name	cimSatelliteTransmitMaxDataRate
OID	1.3.6.1.4.1.6247.4.8.1.1.1.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitMaxDataRate(6)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitMinDataRate
Next sibling	cimSatelliteTransmitAvgDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..999999999
Description	Maximum Rate (Bits Per Second)

13.7.146 cimSatelliteTransmitAvgDataRate

Name	cimSatelliteTransmitAvgDataRate
OID	1.3.6.1.4.1.6247.4.8.1.1.1.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimSatelliteTransmitStatistics(1).cimSatelliteTransmitTable(1).cimSatelliteTransmitEntry(1).cimSatelliteTransmitAvgDataRate(7)
Module	CIMController
Parent	cimSatelliteTransmitEntry
Prev sibling	cimSatelliteTransmitMaxDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..999999999
Description	Average Rate (Bits Per Second)

13.7.147 cimIpRoutingStatistics

Name	cimIpRoutingStatistics
OID	1.3.6.1.4.1.6247.4.8.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2)
Module	CIMController
Parent	cimStatistics
Prev sibling	cimSatelliteTransmitStatistics
Child	cimUnicastIpPacketsToSatellite
Type	OBJECT-IDENTIFIER

13.7.148 CIMUNICASTIPPACKETSTOSATELLITE

Name	cimUnicastIpPacketsToSatellite
OID	1.3.6.1.4.1.6247.4.8.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimUnicastIpPacketsToSatellite(1)
Module	CIMController
Parent	cimIpRoutingStatistics
Next sibling	cimUnicastIpPacketsToEthernet
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Unicast Packets Routed to Satellite

13.7.149 CIMUNICASTIPPACKETSTOETHERNET

Name	cimUnicastIpPacketsToEthernet
OID	1.3.6.1.4.1.6247.4.8.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimUnicastIpPacketsToEthernet(2)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimUnicastIpPacketsToSatellite
Next sibling	cimMulticastIpPacketsToSatellite
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Unicast Packets Routed to Ethernet

13.7.150 CIMMULTICASTIPPACKETSTOSATELLITE

Name	cimMulticastIpPacketsToSatellite
OID	1.3.6.1.4.1.6247.4.8.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimMulticastIpPacketsToSatellite(3)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimUnicastIpPacketsToEthernet
Next sibling	cimMulticastIpPacketsToEthernet
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Unicast Packets Routed to Satellite

13.7.151 CIMMULTICASTIPPACKETSTOETHERNET

Name	cimMulticastIpPacketsToEthernet
OID	1.3.6.1.4.1.6247.4.8.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimMulticastIpPacketsToEthernet(4)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimMulticastIpPacketsToSatellite
Next sibling	cimBroadcastIpPacketsToSatellite
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Multicast Packets Routed to Ethernet

13.7.152 CIMBROADCASTIPPACKETSTOSATELLITE

Name	cimBroadcastIpPacketsToSatellite
OID	1.3.6.1.4.1.6247.4.8.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimBroadcastIpPacketsToSatellite(5)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimMulticastIpPacketsToEthernet
Next sibling	cimBroadcastIpPacketsToEthernet
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Broadcast Packets Routed to Satellite

13.7.153 CIMBROADCASTIPPACKETSTOETHERNET

Name	cimBroadcastIpPacketsToEthernet
OID	1.3.6.1.4.1.6247.4.8.2.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimBroadcastIpPacketsToEthernet(6)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimBroadcastIpPacketsToSatellite
Next sibling	cimPacketsFromSatellite
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Broadcast Packets Routed to Ethernet

13.7.154 CIMPACKETSFROMSATELLITE

Name	cimPacketsFromSatellite
OID	1.3.6.1.4.1.6247.4.8.2.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimPacketsFromSatellite(7)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimBroadcastIpPacketsToEthernet
Next sibling	cimTotalIpPacketsToSatellite
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Packets from Satellite

13.7.155 CIMTOTALIPPACKETSTOSATELLITE

Name	cimTotalIpPacketsToSatellite
OID	1.3.6.1.4.1.6247.4.8.2.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimTotalIpPacketsToSatellite(8)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimPacketsFromSatellite
Next sibling	cimTotalIpPacketsToEthernet
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Total Number of Packets Routed to Satellite

13.7.156 CIMTOTALIPPACKETSTOETHERNET

Name	cimTotalIpPacketsToEthernet
OID	1.3.6.1.4.1.6247.4.8.2.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimTotalIpPacketsToEthernet(9)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimTotalIpPacketsToSatellite
Next sibling	cimIgmpPacketsReceived
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Total Number of Packets Routed to Ethernet

13.7.157 CIMIGMPPACKETSRECEIVED

Name	cimIgmpPacketsReceived
OID	1.3.6.1.4.1.6247.4.8.2.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimIgmpPacketsReceived(10)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimTotalIpPacketsToEthernet
Next sibling	cimIpOptionPacketsReceived
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of IGMP Packets Received

13.7.158 CIM

13.7.159 IPOPTIONPACKETSRECEIVED

Name	cimIpOptionPacketsReceived
OID	1.3.6.1.4.1.6247.4.8.2.11
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimIpOptionPacketsReceived(11)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimIgmpPacketsReceived
Next sibling	cimDroppedPacketsTotal
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of IP Option Packets Received

13.7.160 CIMDROPPEDPACKETSTOTAL

Name	cimDroppedPacketsTotal
OID	1.3.6.1.4.1.6247.4.8.2.12
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsTotal(12)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimIpOptionPacketsReceived
Next sibling	cimDroppedPacketsTTLExpired
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Total Dropped Packets

13.7.161 CIMDROPPEDPACKETSTTLEXPIRED

Name	cimDroppedPacketsTTLExpired
OID	1.3.6.1.4.1.6247.4.8.2.13
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsTTLExpired(13)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsTotal
Next sibling	cimDroppedPacketsBadIpHeader
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Packets Dropped Because TTL (time to live) Expired

13.7.162 CIMDROPPEDPACKETSBADIPHEADER

Name	cimDroppedPacketsBadIpHeader
OID	1.3.6.1.4.1.6247.4.8.2.14
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsBadIpHeader(14)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsTTLExpired
Next sibling	cimDroppedPacketsNoRoute
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Number of Packets Dropped Because of Bad IP Header Checksum

13.7.163 CIMDROPPEDPACKETSNOROUTE

Name	cimDroppedPacketsNoRoute
OID	1.3.6.1.4.1.6247.4.8.2.15
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsNoRoute(15)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsBadIpHeader
Next sibling	cimDroppedPacketsMulticastNoStoe
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - No Route

13.7.164 CIMDROPPEDPACKETSMULTICASTNOSTOE

Name	cimDroppedPacketsMulticastNoStoe
OID	1.3.6.1.4.1.6247.4.8.2.16
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsMulticastNoStoe(16)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsNoRoute
Next sibling	cimDroppedPacketsFiltered
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Multicase No STOE

13.7.165 CIMDROPPEDPACKETSFILTERED

Name	cimDroppedPacketsFiltered
OID	1.3.6.1.4.1.6247.4.8.2.17
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsFiltered(17)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsMulticastNoStoe
Next sibling	cimDroppedPacketsMulticastDisableGroup
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Filtered

13.7.166 CIMDROPPEDPACKETSMULTICASTDISABLEGROUP

Name	cimDroppedPacketsMulticastDisableGroup
OID	1.3.6.1.4.1.6247.4.8.2.18
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsMulticastDisableGroup(18)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsFiltered
Next sibling	cimDroppedPacketsNoArpEntry
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Multicast Disable Group

13.7.167 CIMDROPPEDPACKETSNOARPENTRY

Name	cimDroppedPacketsNoArpEntry
OID	1.3.6.1.4.1.6247.4.8.2.19
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsNoArpEntry(19)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsMulticastDisableGroup
Next sibling	cimDroppedPacketsBadBufferLength
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - No ARP Entry

13.7.168 CIMDROPPEDPACKETSBADBUFFERLENGTH

Name	cimDroppedPacketsBadBufferLength
OID	1.3.6.1.4.1.6247.4.8.2.20
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsBadBufferLength(20)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsNoArpEntry
Next sibling	cimDroppedPacketsBadIpVersion
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Bad Buffer Length

13.7.169 CIMDROPPEDPACKETSBADIPVERSION

Name	cimDroppedPacketsBadIpVersion
OID	1.3.6.1.4.1.6247.4.8.2.21
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsBadIpVersion(21)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsBadBufferLength
Next sibling	cimDroppedPacketsMiscellaneous
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Bad IP Version

13.7.170 CIMDROPPEDPACKETSMISCELLANEOUS

Name	cimDroppedPacketsMiscellaneous
OID	1.3.6.1.4.1.6247.4.8.2.22
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsMiscellaneous(22)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsBadIpVersion
Next sibling	cimDroppedPacketsQos
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Miscellaneous

13.7.171 CIMDROPPEDPACKETSQOS

Name	cimDroppedPacketsQos
OID	1.3.6.1.4.1.6247.4.8.2.23
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsQos(23)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsMiscellaneous
Next sibling	cimDroppedPacketsQosBuffers
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - QOS

13.7.172 CIMDROPPEDPACKETSQOSBUFFERS

Name	cimDroppedPacketsQosBuffers
OID	1.3.6.1.4.1.6247.4.8.2.24
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsQosBuffers(24)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsQos
Next sibling	cimDroppedPacketsDroppedBuffers
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - QOS Buffers

13.7.173 CIMDROPPEDPACKETSDROPPEDBUFFERS

Name	cimDroppedPacketsDroppedBuffers
OID	1.3.6.1.4.1.6247.4.8.2.25
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimDroppedPacketsDroppedBuffers(25)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsQosBuffers
Next sibling	cimResetCounters
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_CNTR32
Base syntax	Counter32
Composed syntax	Counter32
Status	current
Max-access	read-only
Description	Dropped Packets - Dropped Buffers

13.7.174 CIMRESETCOUNTERS

Name	cimResetCounters
OID	1.3.6.1.4.1.6247.4.8.2.26
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cimController(4).cimStatistics(8).cimIpRoutingStatistics(2).cimResetCounters(26)
Module	CIMController
Parent	cimIpRoutingStatistics
Prev sibling	cimDroppedPacketsDroppedBuffers
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	YesNo
Status	current
Max-access	read-write
Description	Clear the Statistics. Setting to 'yes' resets statistics.

13.8 CiM-550 MIB Tree

1 --- iso

1.3 --- org

1.3.6 --- dod

1.3.6.1 --- internet

1.3.6.1.4 --- private

1.3.6.1.4.1 --- enterprises

1.3.6.1.4.1.6247 --- comtech

1.3.6.1.4.1.6247.5 --- cim550

1.3.6.1.4.1.6247.5.1 --- cim550Objects

1.3.6.1.4.1.6247.5.1.1 --- cim550SystemInfo

1.3.6.1.4.1.6247.5.1.1.1 --- cim550EquipmentID (INTEGER)

1.3.6.1.4.1.6247.5.1.1.2 --- cim550UnitSerialNumber (INTEGER)

1.3.6.1.4.1.6247.5.1.1.3 --- cim550SoftwareRevision (DisplayString)

1.3.6.1.4.1.6247.5.1.1.4 --- cim550DeviceTime (DisplayString)

1.3.6.1.4.1.6247.5.1.1.5 --- cim550DeviceDate (DisplayString)

1.3.6.1.4.1.6247.5.1.1.6 --- cim550CircuitID (DisplayString)

1.3.6.1.4.1.6247.5.1.1.7 --- cim550LocalRemoteState (INTEGER)

1.3.6.1.4.1.6247.5.1.2 --- cim550TxParameters

1.3.6.1.4.1.6247.5.1.2.1 --- cim550TxFrequency (INTEGER)

1.3.6.1.4.1.6247.5.1.2.2 --- cim550TxDataRate (INTEGER)

1.3.6.1.4.1.6247.5.1.2.3 --- cim550TxModType (INTEGER)

1.3.6.1.4.1.6247.5.1.2.4 --- cim550TxFECType (INTEGER)

1.3.6.1.4.1.6247.5.1.2.5 --- cim550TxFECCodeRate (INTEGER)

1.3.6.1.4.1.6247.5.1.2.6 --- cim550TxSpecInv (INTEGER)

1.3.6.1.4.1.6247.5.1.2.7 --- cim550TxScrambler (INTEGER)

1.3.6.1.4.1.6247.5.1.2.8 --- cim550TxClockSource (INTEGER)

1.3.6.1.4.1.6247.5.1.2.9 --- cim550TxPowerLevel (INTEGER)

1.3.6.1.4.1.6247.5.1.2.10 --- cim550TxCarrierState (INTEGER)

1.3.6.1.4.1.6247.5.1.3 --- cim550RxParameters

1.3.6.1.4.1.6247.5.1.3.1 --- cim550RxFrequency (INTEGER)

1.3.6.1.4.1.6247.5.1.3.2 --- cim550RxDataRate (INTEGER)

1.3.6.1.4.1.6247.5.1.3.3 --- cim550RxDemodType (INTEGER)
1.3.6.1.4.1.6247.5.1.3.4 --- cim550RxFECType (INTEGER)
1.3.6.1.4.1.6247.5.1.3.5 --- cim550RxFECCodeRate (INTEGER)
1.3.6.1.4.1.6247.5.1.3.6 --- cim550RxSpecInv (INTEGER)
1.3.6.1.4.1.6247.5.1.3.7 --- cim550RxDescrambler (INTEGER)
1.3.6.1.4.1.6247.5.1.3.8 --- cim550RxClockMode (INTEGER)
1.3.6.1.4.1.6247.5.1.3.9 --- cim550RxBufferSize (INTEGER)
1.3.6.1.4.1.6247.5.1.3.10 --- cim550RxAcqSweepRange (INTEGER)
1.3.6.1.4.1.6247.5.1.3.11 --- cim550RxEbnoAlarmPoint (INTEGER)
1.3.6.1.4.1.6247.5.1.4 --- cim550InterfaceParameters
1.3.6.1.4.1.6247.5.1.4.1 --- cim550IfImpedance (INTEGER)
1.3.6.1.4.1.6247.5.1.4.2 --- cim550InterfaceType (INTEGER)
1.3.6.1.4.1.6247.5.1.5 --- cim550UtilityParameters
1.3.6.1.4.1.6247.5.1.5.1 --- cim550UnitFramingMode (INTEGER)
1.3.6.1.4.1.6247.5.1.5.2 --- cim550EdmacAddress (INTEGER)
1.3.6.1.4.1.6247.5.1.5.3 --- cim550UnitTestMode (INTEGER)
1.3.6.1.4.1.6247.5.1.5.4 --- cim550RecenterBuffer (INTEGER)
1.3.6.1.4.1.6247.5.1.5.5 --- cim550ForceRedundentSwitch (INTEGER)
1.3.6.1.4.1.6247.5.1.5.6 --- cim550UnitAlarmMask (INTEGER)
1.3.6.1.4.1.6247.5.1.5.7 --- cim550UnitConfigStore (INTEGER)
1.3.6.1.4.1.6247.5.1.5.8 --- cim550UnitConfigLoad (INTEGER)
1.3.6.1.4.1.6247.5.1.5.9 --- cim550OduCommEnable (INTEGER)
1.3.6.1.4.1.6247.5.1.6 --- cim550AupcParameters
1.3.6.1.4.1.6247.5.1.6.1 --- cim550AupcEnable (INTEGER)
1.3.6.1.4.1.6247.5.1.6.2 --- cim550AupcControlParameters (DisplayString)
1.3.6.1.4.1.6247.5.1.6.3 --- cim550RemoteEbno (INTEGER)
1.3.6.1.4.1.6247.5.1.6.4 --- cim550TxPowerLevelIncrease (INTEGER)
1.3.6.1.4.1.6247.5.1.7 --- cim550StatusParameters
1.3.6.1.4.1.6247.5.1.7.1 --- cim550RxEbno (INTEGER)
1.3.6.1.4.1.6247.5.1.7.2 --- cim550RxCoarseAGC (INTEGER)
1.3.6.1.4.1.6247.5.1.7.3 --- cim550RxFrequencyOffset (INTEGER)
1.3.6.1.4.1.6247.5.1.7.4 --- cim550BufferFillState (INTEGER)
1.3.6.1.4.1.6247.5.1.7.5 --- cim550RxBER (Unsigned32)

1.3.6.1.4.1.6247.5.1.7.6 --- cim550RedundancyState (INTEGER)
1.3.6.1.4.1.6247.5.1.7.7 --- cim550ModemUnitFaults (INTEGER)
1.3.6.1.4.1.6247.5.1.7.8 --- cim550ModemTxTrafficFaults (INTEGER)
1.3.6.1.4.1.6247.5.1.7.9 --- cim550ModemRxTrafficFaults (INTEGER)
1.3.6.1.4.1.6247.5.1.8 --- cim550Logs
1.3.6.1.4.1.6247.5.1.8.1 --- cim550ClearEventsLog (INTEGER)
1.3.6.1.4.1.6247.5.1.8.2 --- cim550NumberUnreadEvents (INTEGER)
1.3.6.1.4.1.6247.5.1.8.3 --- cim550RetrieveNext5Events (DisplayString)
1.3.6.1.4.1.6247.5.1.8.4 --- cim550SetStatisticInterval (INTEGER)
1.3.6.1.4.1.6247.5.1.8.5 --- cim550ClearStatisticsLog (INTEGER)
1.3.6.1.4.1.6247.5.1.8.6 --- cim550NumberUnreadStatistics (INTEGER)
1.3.6.1.4.1.6247.5.1.8.7 --- cim550RetrieveNext5Statistics (DisplayString)
1.3.6.1.4.1.6247.5.1.9 --- cim550Notifications
1.3.6.1.4.1.6247.5.1.9.0 --- cim550NotificationsPrefix
1.3.6.1.4.1.6247.5.1.9.0.624751 --- cim550ModemUnitFaultsNotification
1.3.6.1.4.1.6247.5.1.9.0.624752 --- cim550ModemTxTrafficFaultsNotification
1.3.6.1.4.1.6247.5.1.9.0.624753 --- cim550ModemRxTrafficFaultsNotification
1.3.6.1.4.1.6247.5.2 --- oduObjects
1.3.6.1.4.1.6247.5.2.1 --- oduSelect (INTEGER)
1.3.6.1.4.1.6247.5.2.2 --- oduSystemInfo
1.3.6.1.4.1.6247.5.2.2.1 --- oduModelNumberSoftwareVer (DisplayString)
1.3.6.1.4.1.6247.5.2.2.2 --- oduUnitSerialNumber (DisplayString)
1.3.6.1.4.1.6247.5.2.2.3 --- oduDeviceTime (DisplayString)
1.3.6.1.4.1.6247.5.2.2.4 --- oduDeviceDate (DisplayString)
1.3.6.1.4.1.6247.5.2.2.5 --- oduCircuitID (DisplayString)
1.3.6.1.4.1.6247.5.2.3 --- oduUnitParameters
1.3.6.1.4.1.6247.5.2.3.1 --- oduUnitMuteMode (INTEGER)
1.3.6.1.4.1.6247.5.2.3.2 --- oduUnitColdStart (INTEGER)
1.3.6.1.4.1.6247.5.2.3.3 --- oduUnitAutoFaultRecovery (INTEGER)
1.3.6.1.4.1.6247.5.2.3.4 --- oduUnitExtRefFaultLogic (INTEGER)
1.3.6.1.4.1.6247.5.2.3.5 --- oduUnitRefOscAdjust (INTEGER)
1.3.6.1.4.1.6247.5.2.3.6 --- oduUnitLNACurrentSource (INTEGER)
1.3.6.1.4.1.6247.5.2.3.7 --- oduUnitLNACurrentWindow (INTEGER)

1.3.6.1.4.1.6247.5.2.3.8 --- oduUnitLNAFaultLogic (INTEGER)
1.3.6.1.4.1.6247.5.2.3.9 --- oduUnitRedundancyMode (INTEGER)
1.3.6.1.4.1.6247.5.2.3.10 --- oduUnitRedForceSwitch (INTEGER)
1.3.6.1.4.1.6247.5.2.4 --- oduTxParameters
1.3.6.1.4.1.6247.5.2.4.1 --- oduTxFrequency (INTEGER)
1.3.6.1.4.1.6247.5.2.4.2 --- oduTxAttenuation (INTEGER)
1.3.6.1.4.1.6247.5.2.4.3 --- oduTxAmplifier (INTEGER)
1.3.6.1.4.1.6247.5.2.4.4 --- oduTxMute (INTEGER)
1.3.6.1.4.1.6247.5.2.4.5 --- oduTxSlopeMode (INTEGER)
1.3.6.1.4.1.6247.5.2.4.6 --- oduTxSlopeValue (INTEGER)
1.3.6.1.4.1.6247.5.2.4.7 --- oduTxGainOffset (INTEGER)
1.3.6.1.4.1.6247.5.2.5 --- oduRxParameters
1.3.6.1.4.1.6247.5.2.5.1 --- oduRxFrequency (INTEGER)
1.3.6.1.4.1.6247.5.2.5.2 --- oduRxAttenuation (INTEGER)
1.3.6.1.4.1.6247.5.2.5.3 --- oduRxMute (INTEGER)
1.3.6.1.4.1.6247.5.2.5.4 --- oduRxSlopeMode (INTEGER)
1.3.6.1.4.1.6247.5.2.5.5 --- oduRxSlopeValue (INTEGER)
1.3.6.1.4.1.6247.5.2.5.6 --- oduRxGainOffset (INTEGER)
1.3.6.1.4.1.6247.5.2.6 --- oduUnitStatus
1.3.6.1.4.1.6247.5.2.6.1 --- oduOnlineState (INTEGER)
1.3.6.1.4.1.6247.5.2.6.2 --- oduMaintenanceParameters (DisplayString)
1.3.6.1.4.1.6247.5.2.6.3 --- oduUnitFaults (INTEGER)
1.3.6.1.4.1.6247.5.2.7 --- oduLogs
1.3.6.1.4.1.6247.5.2.7.1 --- oduClearEventsLog (INTEGER)
1.3.6.1.4.1.6247.5.2.7.2 --- oduNumberUnreadEvents (INTEGER)
1.3.6.1.4.1.6247.5.2.7.3 --- oduRetrieveNext5Events (DisplayString)
1.3.6.1.4.1.6247.5.2.8 --- oduNotifications
1.3.6.1.4.1.6247.5.2.8.0 --- oduNotificationsPrefix
1.3.6.1.4.1.6247.5.2.8.0.624754 --- oduUnitFaultsNotification

13.9 CiM-550 MIB

13.9.1 CIM550

Name	cim550
OID	1.3.6.1.4.1.6247.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5)
Module	CIM550
Parent	comtech
Child	cim550Objects
Type	MODULE-IDENTITY
Organization	Comtech EF Data
Last updated	200205071700Z
Contact info	2114 West 7th Street Tempe, AZ 85281 USA
Description	CIM-550 Satellite Modem

13.9.2 CIM550OBJECTS

Name	cim550Objects
OID	1.3.6.1.4.1.6247.5.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1)
Module	CIM550
Parent	cim550
Next sibling	oduObjects
Child	cim550SystemInfo
Type	OBJECT-IDENTIFIER

13.9.3 CIM550SYSTEMINFO

Name	cim550SystemInfo
OID	1.3.6.1.4.1.6247.5.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1)
Module	CIM550
Parent	cim550Objects
Next sibling	cim550TxParameters
Child	cim550EquipmentID
Type	OBJECT-IDENTIFIER

13.9.4 CIM550EQUIPMENTID

Name	cim550EquipmentID
OID	1.3.6.1.4.1.6247.5.1.1.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550EquipmentID(1)
Module	CIM550
Parent	cim550SystemInfo
Next sibling	cim550UnitSerialNumber
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..5
Description	Equipment ID

13.9.5 CIM550UNITSERIALNUMBER

Name	cim550UnitSerialNumber
OID	1.3.6.1.4.1.6247.5.1.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550UnitSerialNumber(2)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550EquipmentID
Next sibling	cim550SoftwareRevision
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..9999
Description	Unit Serial Number

13.9.6 CIM550SOFTWAREREVISION

Name	cim550SoftwareRevision
OID	1.3.6.1.4.1.6247.5.1.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550SoftwareRevision(3)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550UnitSerialNumber
Next sibling	cim550DeviceTime
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	0..4
Description	Software Revision

13.9.7 CIM550DEVICETIME

Name	cim550DeviceTime
OID	1.3.6.1.4.1.6247.5.1.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550DeviceTime(4)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550SoftwareRevision
Next sibling	cim550DeviceDate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	8
Description	Device Time

13.9.8 CIM550DEVICEDATE

Name	cim550DeviceDate
OID	1.3.6.1.4.1.6247.5.1.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550DeviceDate(5)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550DeviceTime
Next sibling	cim550CircuitID
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	8
Description	Device Date

13.9.9 CIM550CIRCUITID

Name	cim550CircuitID
OID	1.3.6.1.4.1.6247.5.1.1.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550CircuitID(6)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550DeviceDate
Next sibling	cim550LocalRemoteState
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	0..24
Description	Circuit ID

13.9.10 CIM550LOCALREMOTESTATE

Name	cim550LocalRemoteState
OID	1.3.6.1.4.1.6247.5.1.1.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550SystemInfo(1).cim550LocalRemoteState(7)
Module	CIM550
Parent	cim550SystemInfo
Prev sibling	cim550CircuitID
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	local(0)
2	remote(1)
Description	Local/Remote State

13.9.11 CIM550TXPARAMETERS

Name	cim550TxParameters
OID	1.3.6.1.4.1.6247.5.1.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550SystemInfo
Next sibling	cim550RxParameters
Child	cim550TxFrequency
Type	OBJECT-IDENTIFIER

13.9.12 CIM550TXFREQUENCY

Name	cim550TxFrequency
OID	1.3.6.1.4.1.6247.5.1.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxFrequency(1)
Module	CIM550
Parent	cim550TxParameters
Next sibling	cim550TxDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	52000000..88000000
2	104000000..188000000
Description	TX Frequency

13.9.13 CIM550TXDATARATE

Name	cim550TxDataRate
OID	1.3.6.1.4.1.6247.5.1.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxDataRate(2)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxFrequency
Next sibling	cim550TxModType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	2400..2048000
Description	TX Data Rate
Note:	Change cim550TxFECType then cim550TxModType then cim550TxFECCodeRate then cim550TxDataRate to allow these parameters set properly.

13.9.14 CIM550TXMODTYPE

Name	cim550TxModType
OID	1.3.6.1.4.1.6247.5.1.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxModType(3)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxDataRate
Next sibling	cim550TxFECType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	bpsk(1)
2	qpsk(2)
3	oqpsk(3)
Description	TX Modulation Type
Note: Change cim550TxFECType then cim550TxModType then cim550TxFECCodeRate then cim550TxDataRate to allow these parameters set properly.	

13.9.15 CIM550TXFECTYPE

Name	cim550TxFECType
OID	1.3.6.1.4.1.6247.5.1.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxFECType(4)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxModType
Next sibling	cim550TxFECCodeRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	none(0)
2	vit(1)
3	seq(2)
4	vitRS(3)
5	seqRS(4)
6	turboQ34(5)
7	turboB2144(6)
8	turboB516(7)
Description	TX Encoder/FEC Type
Note:	Change cim550TxFECType then cim550TxModType then cim550TxFECCodeRate then cim550TxDataRate to allow these parameters set properly.

13.9.16 CIM550TXFECCODERATE

Name	cim550TxFECCodeRate
OID	1.3.6.1.4.1.6247.5.1.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxFECCodeRate(5)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxFECType
Next sibling	cim550TxSpecInv
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	rate12(1)
2	rate34(3)
3	rate78(7)
4	rate2144(8)
5	rate516(9)
Description	TX Encoder/FEC Rate
Note:	Change cim550TxFECType then cim550TxModType then cim550TxFECCodeRate then cim550TxDataRate to allow these parameters set properly.

13.9.17 CIM550TXSPECINV

Name	cim550TxSpecInv
OID	1.3.6.1.4.1.6247.5.1.2.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxSpecInv(6)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxFECCodeRate
Next sibling	cim550TxScrambler
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	normal(0)
2	inverted(1)
Description	TX Spectrum Inversion

13.9.18 CIM550TXSCRAMBLER

Name	cim550TxScrambler
OID	1.3.6.1.4.1.6247.5.1.2.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxScrambler(7)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxSpecInv
Next sibling	cim550TxClockSource
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	off(0)
2	on(1)
Description	TX Scrambler

13.9.19 CIM550TXCLOCKSOURCE

Name	cim550TxClockSource
OID	1.3.6.1.4.1.6247.5.1.2.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxClockSource(8)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxScrambler
Next sibling	cim550TxPowerLevel
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	internal(1)
2	external(2)
3	loopTmed(3)
Description	TX Clock Source

13.9.20 CIM550TXPOWERLEVEL

Name	cim550TxPowerLevel
OID	1.3.6.1.4.1.6247.5.1.2.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxPowerLevel(9)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxClockSource
Next sibling	cim550TxCarrierState
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-200..0
Description	TX Power Level

13.9.21 CIM550TXCARRIERSTATE

Name	cim550TxCarrierState
OID	1.3.6.1.4.1.6247.5.1.2.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550TxParameters(2).cim550TxCarrierState(10)
Module	CIM550
Parent	cim550TxParameters
Prev sibling	cim550TxPowerLevel
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	off(0)
2	on(1)
3	extOff(2)
4	rti(3)
Description	TX Carrier State

13.9.22 CIM550RXPARAMETERS

Name	cim550RxParameters
OID	1.3.6.1.4.1.6247.5.1.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550TxParameters
Next sibling	cim550InterfaceParameters
Child	cim550RxFrequency
Type	OBJECT-IDENTIFIER

13.9.23 CIM550RXFREQUENCY

Name	cim550RxFrequency
OID	1.3.6.1.4.1.6247.5.1.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxFrequency(1)
Module	CIM550
Parent	cim550RxParameters
Next sibling	cim550RxDataRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	52000000..88000000
2	104000000..188000000
Description	RX Frequency

13.9.24 CIM550RXDATARATE

Name	cim550RxDataRate
OID	1.3.6.1.4.1.6247.5.1.3.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxDataRate(2)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxFrequency
Next sibling	cim550RxDemodType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	2400..2048000
Description	RX Data Rate
Note:	Change cim550RxFECType then cim550RxDemodType then cim550RxFECCodeRate then cim550RxDataRate to allow these parameters set properly.

13.9.25 CIM550RXDEMODTYPE

Name	cim550RxDemodType
OID	1.3.6.1.4.1.6247.5.1.3.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxDemodType(3)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxDataRate
Next sibling	cim550RxFECType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	bpsk(1)
2	qpsk(2)
3	oqpsk(3)
Description	RX Demodulation Type
Note:	Change cim550RxFECType then cim550RxDemodType then cim550RxFECCodeRate then cim550RxDataRate to allow these parameters set properly.

13.9.26 CIM550RXFECTYPE

Name	cim550RxFECType
OID	1.3.6.1.4.1.6247.5.1.3.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxFECType(4)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxDemodType
Next sibling	cim550RxFECCodeRate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	none(0)
2	vit(1)
3	seq(2)
4	vitRS(3)
5	seqRS(4)
6	turboQ34(5)
7	turboB2144(6)
8	turboB516(7)
Description	RX Decoder/FEC Type

Note: Change cim550RxFECType then cim550RxDemodType then cim550RxFECCodeRate then cim550RxDataRate to allow these parameters set properly.

13.9.27 CIM550RXFECCODERATE

Name	cim550RxFECCodeRate
OID	1.3.6.1.4.1.6247.5.1.3.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxFECCodeRate(5)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxFECType
Next sibling	cim550RxSpecInv
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	rate12(1)
2	rate34(3)
3	rate78(7)
4	rate2144(8)
5	rate516(9)
Description	RX Decoder/FEC Rate
Note:	Change cim550RxFECType then cim550RxDemodType then cim550RxFECCodeRate then cim550RxDataRate to allow these parameters set properly.

13.9.28 CIM550RXSPECINV

Name	cim550RxSpecInv
OID	1.3.6.1.4.1.6247.5.1.3.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxSpecInv(6)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxFECCodeRate
Next sibling	cim550RxDescrambler
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	normal(0)
2	inverted(1)
Description	RX Spectrum Inversion

13.9.29 CIM550RXDESCRAMBLER

Name	cim550RxDescrambler
OID	1.3.6.1.4.1.6247.5.1.3.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxDescrambler(7)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxSpecInv
Next sibling	cim550RxClockMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	off(0)
2	on(1)
Description	RX Descrambler

13.9.30 CIM550RXCLOCKMODE

Name	cim550RxClockMode
OID	1.3.6.1.4.1.6247.5.1.3.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxClockMode(8)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxDescrambler
Next sibling	cim550RxBufferSize
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	RX Clock Mode

13.9.31 CIM550RXBUFFERSIZE

Name	cim550RxBufferSize
OID	1.3.6.1.4.1.6247.5.1.3.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxBufferSize(9)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxClockMode
Next sibling	cim550RxAcqSweepRange
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	size256(1)
2	size512(2)
3	size1024(3)
4	size2048(4)
5	size4096(5)
Description	RX Buffer Size

13.9.32 CIM550RXACQSWEEPRANGE

Name	cim550RxAcqSweepRange
OID	1.3.6.1.4.1.6247.5.1.3.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxAcqSweepRange(10)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxBufferSize
Next sibling	cim550RxEbnoAlarmPoint
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	1..30
Description	RX Sweep Width

13.9.33 CIM550RXEBNOALARMPOINT

Name	cim550RxEbnoAlarmPoint
OID	1.3.6.1.4.1.6247.5.1.3.11
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550RxParameters(3).cim550RxEbnoAlarmPoint(11)
Module	CIM550
Parent	cim550RxParameters
Prev sibling	cim550RxAcqSweepRange
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..160
Description	RX EbNo Alarm Point

13.9.34 CIM550INTERFACEPARAMETERS

Name	cim550InterfaceParameters
OID	1.3.6.1.4.1.6247.5.1.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550InterfaceParameters(4)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550RxParameters
Next sibling	cim550UtilityParameters
Child	cim550IfImpedance
Type	OBJECT-IDENTIFIER

13.9.35 CIM550IFIMPEDANCE

Name	cim550IfImpedance
OID	1.3.6.1.4.1.6247.5.1.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550InterfaceParameters(4).cim550IfImpedance(1)
Module	CIM550
Parent	cim550InterfaceParameters
Next sibling	cim550InterfaceType
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	ohm50(5)
2	ohm75(7)
Description	IF Impedance

13.9.36 CIM550INTERFACETYPE

Name	cim550InterfaceType
OID	1.3.6.1.4.1.6247.5.1.4.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550InterfaceParameters(4).cim550InterfaceType(2)
Module	CIM550
Parent	cim550InterfaceParameters
Prev sibling	cim550IfImpedance
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	ip(4)
Description	Interface Type is read only and set to IP

13.9.37 CIM550UTILITYPARAMETERS

Name	cim550UtilityParameters
OID	1.3.6.1.4.1.6247.5.1.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550InterfaceParameters
Next sibling	cim550AupcParameters
Child	cim550UnitFramingMode
Type	OBJECT-IDENTIFIER

13.9.38 CIM550UNITFRAMINGMODE

Name	cim550UnitFramingMode
OID	1.3.6.1.4.1.6247.5.1.5.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550UnitFramingMode(1)
Module	CIM550
Parent	cim550UtilityParameters
Next sibling	cim550EdmacAddress
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	unframed(0)
2	framed(1)
Description	Unit Framing Mode

13.9.39 CIM550EDMACADDRESS

Name	cim550EdmacAddress
OID	1.3.6.1.4.1.6247.5.1.5.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550EdmacAddress(2)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550UnitFramingMode
Next sibling	cim550UnitTestMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..9999
Description	EDMAC Address

13.9.40 CIM550UNITTESTMODE

Name	cim550UnitTestMode
OID	1.3.6.1.4.1.6247.5.1.5.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550UnitTestMode(3)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550EdmacAddress
Next sibling	cim550RecenterBuffer
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	normal(0)
2	iFLoopBack(1)
3	digitalLoopBack(2)
4	iOLoopBack(3)
5	txCW(4)
6	txAlternatingPattern(5)
Description	Unit Test Mode

13.9.41 CIM550RECENTERBUFFER

Name	cim550RecenterBuffer
OID	1.3.6.1.4.1.6247.5.1.5.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550RecenterBuffer(4)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550UnitTestMode
Next sibling	cim550ForceRedundentSwitch
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Recenter Buffer

13.9.42 CIM550FORCEREDUNDENTSWITCH

Name	cim550ForceRedundentSwitch
OID	1.3.6.1.4.1.6247.5.1.5.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550ForceRedundentSwitch(5)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550RecenterBuffer
Next sibling	cim550UnitAlarmMask
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Force Redundundent Switch

13.9.43 CIM550UNITALARMMASK

Name	cim550UnitAlarmMask
OID	1.3.6.1.4.1.6247.5.1.5.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550UnitAlarmMask(6)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550ForceRedundentSwitch
Next sibling	cim550UnitConfigStore
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..11111
Description	Unit Alarm Mask

13.9.44 CIM550UNITCONFIGSTORE

Name	cim550UnitConfigStore
OID	1.3.6.1.4.1.6247.5.1.5.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550UnitConfigStore(7)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550UnitAlarmMask
Next sibling	cim550UnitConfigLoad
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..9
Description	Store Unit Configuration

13.9.45 CIM550UNITCONFIGLOAD

Name	cim550UnitConfigLoad
OID	1.3.6.1.4.1.6247.5.1.5.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550UnitConfigLoad(8)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550UnitConfigStore
Next sibling	cim550OduCommEnable
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..9
Description	Load Unit Configuration

13.9.46 CIM550ODUCOMMENABLE

Name	cim550OduCommEnable
OID	1.3.6.1.4.1.6247.5.1.5.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550UtilityParameters(5).cim550OduCommEnable(9)
Module	CIM550
Parent	cim550UtilityParameters
Prev sibling	cim550UnitConfigLoad
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disable(0)
2	enable(1)
Description	Outdoor Unit Communication Enable

13.9.47 CIM550AUPCPARAMETERS

Name	cim550AupcParameters
OID	1.3.6.1.4.1.6247.5.1.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550AupcParameters(6)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550UtilityParameters
Next sibling	cim550StatusParameters
Child	cim550AupcEnable
Type	OBJECT-IDENTIFIER

13.9.48 CIM550AUPCENABLE

Name	cim550AupcEnable
OID	1.3.6.1.4.1.6247.5.1.6.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550AupcParameters(6).cim550AupcEnable(1)
Module	CIM550
Parent	cim550AupcParameters
Next sibling	cim550AupcControlParameters
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disable(0)
2	enable(1)
Description	AUPC Enable

13.9.49 CIM550AUPCCONTROLPARAMETERS

Name	cim550AupcControlParameters
OID	1.3.6.1.4.1.6247.5.1.6.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550AupcParameters(6).cim550AupcControlParameters(2)
Module	CIM550
Parent	cim550AupcParameters
Prev sibling	cim550AupcEnable
Next sibling	cim550RemoteEbno
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Description	AUPC Control Parameters

13.9.50 CIM550REMOTEEBNO

Name	cim550RemoteEbno
OID	1.3.6.1.4.1.6247.5.1.6.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550AupcParameters(6).cim550RemoteEbno(3)
Module	CIM550
Parent	cim550AupcParameters
Prev sibling	cim550AupcControlParameters
Next sibling	cim550TxPowerLevelIncrease
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	20..160
2	999
Description	Remote EbNo

13.9.51 CIM550TXPOWERLEVELINCREASE

Name	cim550TxPowerLevelIncrease
OID	1.3.6.1.4.1.6247.5.1.6.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550AupcParameters(6).cim550TxPowerLevelIncrease(4)
Module	CIM550
Parent	cim550AupcParameters
Prev sibling	cim550RemoteEbno
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..90
Description	TX Power Level Increase

13.9.52 CIM550STATUSPARAMETERS

Name	cim550StatusParameters
OID	1.3.6.1.4.1.6247.5.1.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550AupcParameters
Next sibling	cim550Logs
Child	cim550RxEbno
Type	OBJECT-IDENTIFIER

13.9.53 CIM550RXEBNO

Name	cim550RxEbno
OID	1.3.6.1.4.1.6247.5.1.7.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550RxEbno(1)
Module	CIM550
Parent	cim550StatusParameters
Next sibling	cim550RxCoarseAGC
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..160
2	999
Description	RX EbNo

13.9.54 CIM550RXCOARSEAGC

Name	cim550RxCoarseAGC
OID	1.3.6.1.4.1.6247.5.1.7.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550RxCoarseAGC(2)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550RxEbno
Next sibling	cim550RxFrequencyOffset
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..99
Description	RX Coarse AGC

13.9.55 CIM550RXFREQUENCYOFFSET

Name	cim550RxFrequencyOffset
OID	1.3.6.1.4.1.6247.5.1.7.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550RxFrequencyOffset(3)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550RxCoarseAGC
Next sibling	cim550BufferFillState
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	-30..30
2	999
Description	RX Frequency Offset

13.9.56 CIM550BUFFERFILLSTATE

Name	cim550BufferFillState
OID	1.3.6.1.4.1.6247.5.1.7.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550BufferFillState(4)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550RxFrequencyOffset
Next sibling	cim550RxBER
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..99
Description	Buffer Fill State

13.9.57 CIM550RXBER

Name	cim550RxBER
OID	1.3.6.1.4.1.6247.5.1.7.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550RxBER(5)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550BufferFillState
Next sibling	cim550RedundancyState
Type	OBJECT-TYPE
Numerical syntax	bad syntax
Base syntax	Unsigned32
Composed syntax	Unsigned32
Status	current
Max-access	read-only
Description	RX Bit Error Rate (BER)

13.9.58 CIM550REDUNDANCYSTATE

Name	cim550RedundancyState
OID	1.3.6.1.4.1.6247.5.1.7.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550RedundancyState(6)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550RxBER
Next sibling	cim550ModemUnitFaults
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	offline(0)
2	online(1)
Description	Redundancy State

13.9.59 CIM550MODEMUNITFAULTS

Name	cim550ModemUnitFaults
OID	1.3.6.1.4.1.6247.5.1.7.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550ModemUnitFaults(7)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550RedundancyState
Next sibling	cim550ModemTxTrafficFaults
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..8191
Description	Modem Unit Faults (read only)

13.9.60 CIM550MODEMTXTRAFFICFAULTS

Name	cim550ModemTxTrafficFaults
OID	1.3.6.1.4.1.6247.5.1.7.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550ModemTxTrafficFaults(8)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550ModemUnitFaults
Next sibling	cim550ModemRxTrafficFaults
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..31
Description	Modem TX Traffic Faults (read only)

13.9.61 CIM550MODEMRXTRAFFICFAULTS

Name	cim550ModemRxTrafficFaults
OID	1.3.6.1.4.1.6247.5.1.7.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550StatusParameters(7).cim550ModemRxTrafficFaults(9)
Module	CIM550
Parent	cim550StatusParameters
Prev sibling	cim550ModemTxTrafficFaults
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Size list	
1	0..255
Description	Modem RX Traffic Faults (read only)

13.9.62 CIM550LOGS

Name	cim550Logs
OID	1.3.6.1.4.1.6247.5.1.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550StatusParameters
Next sibling	cim550Notifications
Child	cim550ClearEventsLog
Type	OBJECT-IDENTIFIER

13.9.63 CIM550CLEAREVENTSLOG

Name	cim550ClearEventsLog
OID	1.3.6.1.4.1.6247.5.1.8.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550ClearEventsLog(1)
Module	CIM550
Parent	cim550Logs
Next sibling	cim550NumberUnreadEvents
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Clear Events Log

13.9.64 CIM550NUMBERUNREADEVENTS

Name	cim550NumberUnreadEvents
OID	1.3.6.1.4.1.6247.5.1.8.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550NumberUnreadEvents(2)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550ClearEventsLog
Next sibling	cim550RetrieveNext5Events
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..99
Description	Number of Unread Events

13.9.65 CIM550RETRIEVENEXT5EVENTS

Name	cim550RetrieveNext5Events
OID	1.3.6.1.4.1.6247.5.1.8.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550RetrieveNext5Events(3)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550NumberUnreadEvents
Next sibling	cim550SetStatisticInterval
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Description	Retrieve Next 5 Events

13.9.66 CIM550SETSTATISTICINTERVAL

Name	cim550SetStatisticInterval
OID	1.3.6.1.4.1.6247.5.1.8.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550SetStatisticInterval(4)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550RetrieveNext5Events
Next sibling	cim550ClearStatisticsLog
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	none(0)
2	mins10(1)
3	mins20(2)
4	mins30(3)
5	mins40(4)
6	mins50(5)
7	mins60(6)
8	mins70(7)
9	mins80(8)
10	mins90(9)
Description	Set Statistic Interval

13.9.67 CIM550CLEARSTATISTICSLOG

Name	cim550ClearStatisticsLog
OID	1.3.6.1.4.1.6247.5.1.8.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550ClearStatisticsLog(5)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550SetStatisticInterval
Next sibling	cim550NumberUnreadStatistics
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Clear Statistics Log

13.9.68 CIM550NUMBERUNREADSTATISTICS

Name	cim550NumberUnreadStatistics
OID	1.3.6.1.4.1.6247.5.1.8.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550NumberUnreadStatistics(6)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550ClearStatisticsLog
Next sibling	cim550RetrieveNext5Statistics
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..250
Description	Number of Unread Statistics

13.9.69 CIM550RETRIEVENEXT5STATISTICS

Name	cim550RetrieveNext5Statistics
OID	1.3.6.1.4.1.6247.5.1.8.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Logs(8).cim550RetrieveNext5Statistics(7)
Module	CIM550
Parent	cim550Logs
Prev sibling	cim550NumberUnreadStatistics
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Description	Retrieve Next 5 Statistics

13.9.70 CIM550NOTIFICATIONS

Name	cim550Notifications
OID	1.3.6.1.4.1.6247.5.1.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Notifications(9)
Module	CIM550
Parent	cim550Objects
Prev sibling	cim550Logs
Child	cim550NotificationsPrefix
Type	OBJECT-IDENTIFIER

13.9.71 CIM550NOTIFICATIONSPREFIX

Name	cim550NotificationsPrefix
OID	1.3.6.1.4.1.6247.5.1.9.0
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Notifications(9).cim550NotificationsPrefix(0)
Module	CIM550
Parent	cim550Notifications
Child	cim550ModemUnitFaultsNotification
Type	OBJECT-IDENTIFIER

13.9.72 CIM550MODEMUNITFAULTSNOTIFICATION

Name	cim550ModemUnitFaultsNotification
OID	1.3.6.1.4.1.6247.5.1.9.0.624751
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Notifications(9).cim550NotificationsPrefix(0).cim550ModemUnitFaultsNotification(624751)
Module	CIM550
Parent	cim550NotificationsPrefix
Next sibling	cim550ModemTxTrafficFaultsNotification
Type	NOTIFICATION-TYPE
Objects	
1	cim550ModemUnitFaults
Description	Modem Unit Faults Trap

13.9.73 CIM550MODEMTXTRAFFICFAULTSNOTIFICATION

Name	cim550ModemTxTrafficFaultsNotification
OID	1.3.6.1.4.1.6247.5.1.9.0.624752
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Notifications(9).cim550NotificationsPrefix(0).cim550ModemTxTrafficFaultsNotification(624752)
Module	CIM550
Parent	cim550NotificationsPrefix
Prev sibling	cim550ModemUnitFaultsNotification
Next sibling	cim550ModemRxTrafficFaultsNotification
Type	NOTIFICATION-TYPE
Objects	
1	cim550ModemTxTrafficFaults
Description	Modem TX Traffic Faults

13.9.74 CIM550MODEMRXTRAFFICFAULTSNOTIFICATION

Name	cim550ModemRxTrafficFaultsNotification
OID	1.3.6.1.4.1.6247.5.1.9.0.624753
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).cim550Objects(1).cim550Notifications(9).cim550NotificationsPrefix(0).cim550ModemRxTrafficFaultsNotification(624753)
Module	CIM550
Parent	cim550NotificationsPrefix
Prev sibling	cim550ModemTxTrafficFaultsNotification
Type	NOTIFICATION-TYPE
Objects	
1	cim550ModemRxTrafficFaults
Description	Modem RX Traffic Faults

13.9.75 ODUOBJECTS

Name	oduObjects
OID	1.3.6.1.4.1.6247.5.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2)
Module	CIM550
Parent	cim550
Prev sibling	cim550Objects
Child	oduSelect
Type	OBJECT-IDENTIFIER

13.9.76 ODUSELECT

Name	oduSelect
OID	1.3.6.1.4.1.6247.5.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSelect(1)
Module	CIM550
Parent	oduObjects
Next sibling	oduSystemInfo
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	odu1(1)
2	odu2(2)
Description	ODU Select

13.9.77 ODUSYSTEMINFO

Name	oduSystemInfo
OID	1.3.6.1.4.1.6247.5.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2)
Module	CIM550
Parent	oduObjects
Prev sibling	oduSelect
Next sibling	oduUnitParameters
Child	oduModelNumberSoftwareVer
Type	OBJECT-IDENTIFIER

13.9.78 oduModelNumberSoftwareVer

Name	oduModelNumberSoftwareVer
OID	1.3.6.1.4.1.6247.5.2.2.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2).oduModelNumberSoftwareVer(1)
Module	CIM550
Parent	oduSystemInfo
Next sibling	oduUnitSerialNumber
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	20
Description	Model Number Software Version

13.9.79 oduUnitSerialNumber

Name	oduUnitSerialNumber
OID	1.3.6.1.4.1.6247.5.2.2.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2).oduUnitSerialNumber(2)
Module	CIM550
Parent	oduSystemInfo
Prev sibling	oduModelNumberSoftwareVer
Next sibling	oduDeviceTime
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	6
Description	Unit Serial Number

13.9.80 oduDeviceTime

Name	oduDeviceTime
OID	1.3.6.1.4.1.6247.5.2.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2).oduDeviceTime(3)
Module	CIM550
Parent	oduSystemInfo
Prev sibling	oduUnitSerialNumber
Next sibling	oduDeviceDate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	8
Description	Device Time

13.9.81 oduDeviceDate

Name	oduDeviceDate
OID	1.3.6.1.4.1.6247.5.2.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2).oduDeviceDate(4)
Module	CIM550
Parent	oduSystemInfo
Prev sibling	oduDeviceTime
Next sibling	oduCircuitID
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	8
Description	Device Date

13.9.82 oduCircuitID

Name	oduCircuitID
OID	1.3.6.1.4.1.6247.5.2.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduSystemInfo(2).oduCircuitID(5)
Module	CIM550
Parent	oduSystemInfo
Prev sibling	oduDeviceDate
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-write
Size list	
1	24
Description	Circuit ID

13.9.83 oduUnitParameters

Name	oduUnitParameters
OID	1.3.6.1.4.1.6247.5.2.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3)
Module	CIM550
Parent	oduObjects
Prev sibling	oduSystemInfo
Next sibling	oduTxParameters
Child	oduUnitMuteMode
Type	OBJECT-IDENTIFIER

13.9.84 oduUnitMuteMode

Name	oduUnitMuteMode
OID	1.3.6.1.4.1.6247.5.2.3.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitMuteMode(1)
Module	CIM550
Parent	oduUnitParameters
Next sibling	oduUnitColdStart
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	unmute(0)
2	mute(1)
Description	Unit Mute Mode

13.9.85 oduUnitColdStart

Name	oduUnitColdStart
OID	1.3.6.1.4.1.6247.5.2.3.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitColdStart(2)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitMuteMode
Next sibling	oduUnitAutoFaultRecovery
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	Unit Cold Start

13.9.86 oduUnitAutoFaultRecovery

Name	oduUnitAutoFaultRecovery
OID	1.3.6.1.4.1.6247.5.2.3.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitAutoFaultRecovery(3)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitColdStart
Next sibling	oduUnitExtRefFaultLogic
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	Unit Auto Fault Recovery

13.9.87 oduUnitExtRefFaultLogic

Name	oduUnitExtRefFaultLogic
OID	1.3.6.1.4.1.6247.5.2.3.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitExtRefFaultLogic(4)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitAutoFaultRecovery
Next sibling	oduUnitRefOscAdjust
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	Unit External Reference Fault Logic

13.9.88 oduUnitRefOscAdjust

Name	oduUnitRefOscAdjust
OID	1.3.6.1.4.1.6247.5.2.3.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitRefOscAdjust(5)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitExtRefFaultLogic
Next sibling	oduUnitLNACurrentSource
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..255
Description	Unit Reference Oscellator Adjust

13.9.89 oduUnitLNACurrentSource

Name	oduUnitLNACurrentSource
OID	1.3.6.1.4.1.6247.5.2.3.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitLNACurrentSource(6)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitRefOscAdjust
Next sibling	oduUnitLNACurrentWindow
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	Unit LNA Current Source

13.9.90 ODUUNITLNACURRENTWINDOW

Name	oduUnitLNACurrentWindow
OID	1.3.6.1.4.1.6247.5.2.3.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitLNACurrentWindow(7)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitLNACurrentSource
Next sibling	oduUnitLNAFaultLogic
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	percent20(20)
2	percent25(25)
3	percent30(30)
4	percent35(35)
5	percent40(40)
6	percent45(45)
7	percent50(50)
8	disabled(99)
Description	Unit LNA Current Window

13.9.91 oduUnitLNAFaultLogic

Name	oduUnitLNAFaultLogic
OID	1.3.6.1.4.1.6247.5.2.3.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitLNAFaultLogic(8)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitLNACurrentWindow
Next sibling	oduUnitRedundancyMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	Unit LNA Fault Logic

13.9.92 oduUnitRedundancyMode

Name	oduUnitRedundancyMode
OID	1.3.6.1.4.1.6247.5.2.3.9
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitRedundancyMode(9)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitLNAFaultLogic
Next sibling	oduUnitRedForceSwitch
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	manual(0)
2	auto(1)
Description	Unit Redundancy Mode

13.9.93 oduUnitRedForceSwitch

Name	oduUnitRedForceSwitch
OID	1.3.6.1.4.1.6247.5.2.3.10
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitParameters(3).oduUnitRedForceSwitch(10)
Module	CIM550
Parent	oduUnitParameters
Prev sibling	oduUnitRedundancyMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Unit Redundancy Force Switch

13.9.94 oduTxParameters

Name	oduTxParameters
OID	1.3.6.1.4.1.6247.5.2.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4)
Module	CIM550
Parent	oduObjects
Prev sibling	oduUnitParameters
Next sibling	oduRxParameters
Child	oduTxFrequency
Type	OBJECT-IDENTIFIER

13.9.95 oduTxFrequency

Name	oduTxFrequency
OID	1.3.6.1.4.1.6247.5.2.4.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxFrequency(1)
Module	CIM550
Parent	oduTxParameters
Next sibling	oduTxAttenuation
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	5845000..18100000
Description	TX Frequency

13.9.96 oduTxAttenuation

Name	oduTxAttenuation
OID	1.3.6.1.4.1.6247.5.2.4.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxAttenuation(2)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxFrequency
Next sibling	oduTxAmplifier
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..2000
Description	TX Attenuation

13.9.97 ODUTXAMPLIFIER

Name	oduTxAmplifier
OID	1.3.6.1.4.1.6247.5.2.4.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxAmplifier(3)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxAttenuation
Next sibling	oduTxMute
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	off(0)
2	on(1)
Description	TX Amplifier

13.9.98 ODUTXMUTE

Name	oduTxMute
OID	1.3.6.1.4.1.6247.5.2.4.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxMute(4)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxAmplifier
Next sibling	oduTxSlopeMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	TX Mute

13.9.99 oduTxSlopeMode

Name	oduTxSlopeMode
OID	1.3.6.1.4.1.6247.5.2.4.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxSlopeMode(5)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxMute
Next sibling	oduTxSlopeValue
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	manual(0)
2	calibrated(1)
Description	TX Slope Mode

13.9.100 oduTxSlopeValue

Name	oduTxSlopeValue
OID	1.3.6.1.4.1.6247.5.2.4.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxSlopeValue(6)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxSlopeMode
Next sibling	oduTxGainOffset
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..10
Description	TX Slope Value

13.9.101 ODUTXGAINOFFSET

Name	oduTxGainOffset
OID	1.3.6.1.4.1.6247.5.2.4.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduTxParameters(4).oduTxGainOffset(7)
Module	CIM550
Parent	oduTxParameters
Prev sibling	oduTxSlopeValue
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-400..0
Description	TX Gain Offset

13.9.102 ODURXPARAMETERS

Name	oduRxParameters
OID	1.3.6.1.4.1.6247.5.2.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5)
Module	CIM550
Parent	oduObjects
Prev sibling	oduTxParameters
Next sibling	oduUnitStatus
Child	oduRxFrequency
Type	OBJECT-IDENTIFIER

13.9.103 oduRxFrequency

Name	oduRxFrequency
OID	1.3.6.1.4.1.6247.5.2.5.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxFrequency(1)
Module	CIM550
Parent	oduRxParameters
Next sibling	oduRxAttenuation
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	3400000..14100000
Description	RX Frequency

13.9.104 oduRxAttenuation

Name	oduRxAttenuation
OID	1.3.6.1.4.1.6247.5.2.5.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxAttenuation(2)
Module	CIM550
Parent	oduRxParameters
Prev sibling	oduRxFrequency
Next sibling	oduRxMute
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..2500
Description	RX Attenuation

13.9.105 ODURXMUTE

Name	oduRxMute
OID	1.3.6.1.4.1.6247.5.2.5.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxMute(3)
Module	CIM550
Parent	oduRxParameters
Prev sibling	oduRxAttenuation
Next sibling	oduRxSlopeMode
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	disabled(0)
2	enabled(1)
Description	RX Mute

13.9.106 ODURXSLOPEMODE

Name	oduRxSlopeMode
OID	1.3.6.1.4.1.6247.5.2.5.4
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxSlopeMode(4)
Module	CIM550
Parent	oduRxParameters
Prev sibling	oduRxMute
Next sibling	oduRxSlopeValue
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	manual(0)
2	calibrated(1)
Description	RX Slope Mode

13.9.107 oduRxSlopeValue

Name	oduRxSlopeValue
OID	1.3.6.1.4.1.6247.5.2.5.5
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxSlopeValue(5)
Module	CIM550
Parent	oduRxParameters
Prev sibling	oduRxSlopeMode
Next sibling	oduRxGainOffset
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	0..10
Description	RX Slope Value

13.9.108 oduRxGainOffset

Name	oduRxGainOffset
OID	1.3.6.1.4.1.6247.5.2.5.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduRxParameters(5).oduRxGainOffset(6)
Module	CIM550
Parent	oduRxParameters
Prev sibling	oduRxSlopeValue
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Size list	
1	-400..0
Description	RX Gain Offset

13.9.109 oduUnitStatus

Name	oduUnitStatus
OID	1.3.6.1.4.1.6247.5.2.6
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitStatus(6)
Module	CIM550
Parent	oduObjects
Prev sibling	oduRxParameters
Next sibling	oduLogs
Child	oduOnlineState
Type	OBJECT-IDENTIFIER

13.9.110 oduOnlineState

Name	oduOnlineState
OID	1.3.6.1.4.1.6247.5.2.6.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitStatus(6).oduOnlineState(1)
Module	CIM550
Parent	oduUnitStatus
Next sibling	oduMaintenanceParameters
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Value list	
1	offline(0)
2	online(1)
Description	Online State

13.9.111 oduMaintenanceParameters

Name	oduMaintenanceParameters
OID	1.3.6.1.4.1.6247.5.2.6.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitStatus(6).oduMaintenanceParameters(2)
Module	CIM550
Parent	oduUnitStatus
Prev sibling	oduOnlineState
Next sibling	oduUnitFaults
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Size list	
1	80
Description	Maintenance Parameters

13.9.112 oduUnitFaults

Name	oduUnitFaults
OID	1.3.6.1.4.1.6247.5.2.6.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduUnitStatus(6).oduUnitFaults(3)
Module	CIM550
Parent	oduUnitStatus
Prev sibling	oduMaintenanceParameters
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..262143
Description	Unit Faults

13.9.113 ODULOGS

Name	oduLogs
OID	1.3.6.1.4.1.6247.5.2.7
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduLogs(7)
Module	CIM550
Parent	oduObjects
Prev sibling	oduUnitStatus
Next sibling	oduNotifications
Child	oduClearEventsLog
Type	OBJECT-IDENTIFIER

13.9.114 ODUCLEAREVENTSLOG

Name	oduClearEventsLog
OID	1.3.6.1.4.1.6247.5.2.7.1
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduLogs(7).oduClearEventsLog(1)
Module	CIM550
Parent	oduLogs
Next sibling	oduNumberUnreadEvents
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-write
Value list	
1	yes(1)
Description	Clear Events Log

13.9.115 oduNumberUnreadEvents

Name	oduNumberUnreadEvents
OID	1.3.6.1.4.1.6247.5.2.7.2
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduLogs(7).oduNumberUnreadEvents(2)
Module	CIM550
Parent	oduLogs
Prev sibling	oduClearEventsLog
Next sibling	oduRetrieveNext5Events
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_INT
Base syntax	INTEGER
Composed syntax	INTEGER
Status	current
Max-access	read-only
Size list	
1	0..99
Description	Number of Unread Events

13.9.116 oduRetrieveNext5Events

Name	oduRetrieveNext5Events
OID	1.3.6.1.4.1.6247.5.2.7.3
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduLogs(7).oduRetrieveNext5Events(3)
Module	CIM550
Parent	oduLogs
Prev sibling	oduNumberUnreadEvents
Type	OBJECT-TYPE
Numerical syntax	SNMP_SYNTAX_OCTETS
Base syntax	OCTET STRING
Composed syntax	DisplayString
Status	current
Max-access	read-only
Description	Retrieve Next 5 Events

13.9.117 oduNotifications

Name	oduNotifications
OID	1.3.6.1.4.1.6247.5.2.8
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduNotifications(8)
Module	CIM550
Parent	oduObjects
Prev sibling	oduLogs
Child	oduNotificationsPrefix
Type	OBJECT-IDENTIFIER

13.9.118 oduNotificationsPrefix

Name	oduNotificationsPrefix
OID	1.3.6.1.4.1.6247.5.2.8.0
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduNotifications(8).oduNotificationsPrefix(0)
Module	CIM550
Parent	oduNotifications
Child	oduUnitFaultsNotification
Type	OBJECT-IDENTIFIER

13.9.119 oduUnitFaultsNotification

Name	oduUnitFaultsNotification
OID	1.3.6.1.4.1.6247.5.2.8.0.624754
Full path	iso(1).org(3).dod(6).internet(1).private(4).enterprises(1).comtech(6247).cim550(5).oduObjects(2).oduNotifications(8).oduNotificationsPrefix(0).oduUnitFaultsNotification(624754)
Module	CIM550
Parent	oduNotificationsPrefix
Type	NOTIFICATION-TYPE
Objects	
1	oduUnitFaults
Description	ODU Unit Faults

NOTES:

Chapter 14.
CiM IP Module Checkout and Fault Isolation

14.1 INTRODUCTION

This equipment contains parts and assemblies sensitive to damage by ESD. Use ESD precautionary procedures when touching, removing, or inserting PCBs.

This Chapter is for testing and troublshooting CiM IP module and assumes that the base satellite modem is correctly configured and functioning properly.

14.2 CIM IP MODULECHECKOUT

The steps in this guide will lead to following configuration:

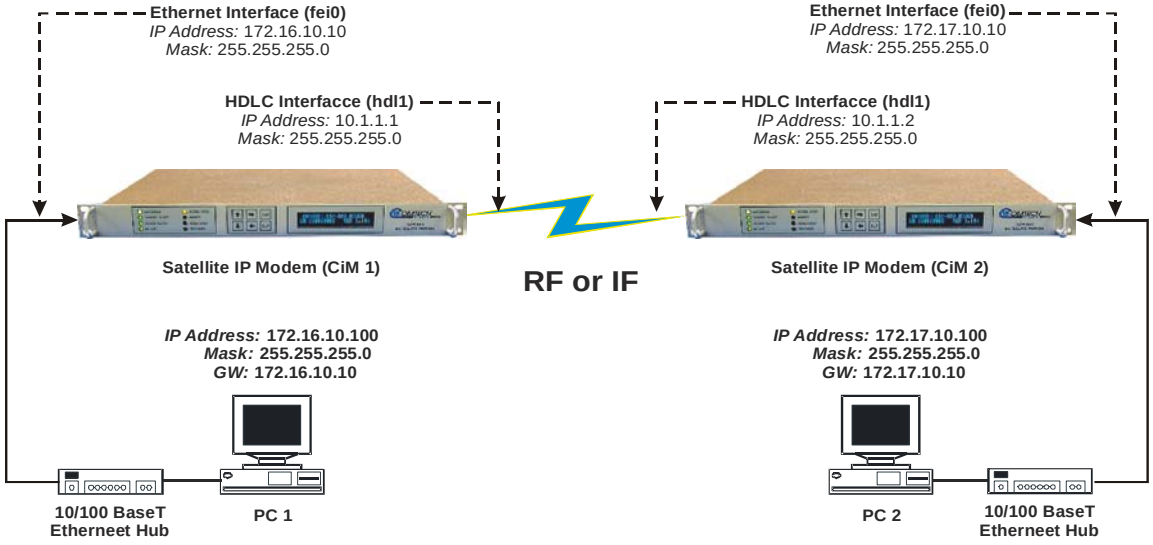


Figure14-1. Typical Point-to-Point System Configuration

14.2.1 EQUIPMENT LIST

Following equipment is required:

Item	Equipment	Quantity	Comments
1	CiM-550 Modem	2	
2	10/100baseT Ethernet Hub	2	Provided by customer
3	PC with NIC and a terminal emulation program	2	Provided by customer
4	Console cable (DB-9 to RJ-11)	1	Can be procured from Comtech EF Data
5	Ethernet cables	4	Provided by customer
6	IF cables	2	Provided by customer (For IF loopback only. Additional equipment required for RF connectivity.)
Optional Equipment			
7	Traffic Generator such as SmartBits	1	Provided by customer

14.2.1 EQUIPMENT SETUP

Step	Procedure
1	Connect each CiM to the PC via the Ethernet Hub.
2	Connect the TX IF on CiM 1 to RX IF of CiM 2 and vice-versa.
3	Connect the DB-9 end of the console cable to the COM1 or COM2 port of the PC and the RJ-11 end to the console port at the back of CiM 1.
4	Connect CiM 1 and CiM 2 to suitable power supply and turn them ON.

14.2.2 PC CONIGURATION

Step	Procedure
1	Set the IP address on PC 1 to **172.16.10.100**, mask to **255.255.255.0** and gateway to **172.16.10.10**.
2	Set the IP address on PC 2 to **172.17.10.100**, mask to **255.255.255.0** and gateway to **172.17.10.10**. Reboot the PCs (if required).

14.2.3 TRANSMIT AND RECEIVE IF CONFIGURATION

Step	Procedure
1	Configure the transmit and receive IF parameters on CiM 1 and CiM 2 via the front panel.

Note: The IF parameters can also be set via console menu, Telnet, web interface and SNMP - but for this exercise, it is recommended that the front panel be used.

2	Set the **TxPower** to minimum level.
3	Before proceeding to next step, make sure that each CiM is locked to the other CiM.

14.2.4 BASIC IP CONFIGURATION

Step	Procedure
1	Launch the terminal emulation program - such as HyperTerminal on Microsoft Windows.
2	Select the appropriate COM port (to which the DB-9 end of the console cable is connected) and configure it for: ▸ 38,400 bps ▸ 8 data bits ▸ no parity ▸ 1 stop bit ▸ no hardware flow control
3	Press return and to bring up the Main menu.

14.2.5 MAIN MENU

Figure 14-1. Main Menu

To use this onterface, select the appropriate sub-menu or the entry by pressing the character indicated at the right. Enter ***x*** to return to the previous menu.

14.2.6 RESTORING FACTORY DEFAULT CONFIGURATION

The following sections in this guide assume that the CiM is still in factory default configuration for IP. If that's not the case, the factory default configuration can be restored from the menu:

Step	Procedure
1	From the **Main Menu,** select **Administration** sub-menu.
2	From the **Administration** menu, select **Operations and Maintenance** sub-menu.
3	From the **Operations and Maintenance** menu, select **Database Operations** sub-menu
4	From the **Database Operations** menu, select **Restore Factory Default** option
5	Confirm when prompted.

This will erase any user configuration and restore the CiM to factory default configuration.

14.2.7 CIM 1 CONFIGURATION

CiM has 2 data interfaces - a LAN interface and a WAN interface. The LAN interface is a 10/100baseT Ethernet port (**fei0**). The WAN interface is the serial synchronous HDLC interface (**hdl0**). The Ethernet MAC address is factory assigned and cannot be changed.

14.2.1.1 SETTING IP ADDRESS(ES)

Step	Procedure
1	From the **Main Menu** select **Interface Configuration** sub-menu.
2	From the **Interface Configuration Menu** select **Ethernet Interface (fei0)**
3	Set **IP Address** to **172.16.10.10**
4	Set **Subnet Prefix Length** to **24**
5	From the **Interface Configuration Menu** select **Satellite/HDLC Interface (hdl0).**
6	Set **IP Address** to **10.1.1.1**
7	Set **Subnet Prefix Length** to **24**
8	Set **RX – Enable/Disable** and **TX – Enable/Disable** to **Enable.**
9	From **Receive HDLC Channel Address** menu set **HDLC Addr 1** to **1 (0x0001)**

The other parameters can be left to their factory default settings.

At this point you should be able to ping CiM 1 from PC 1:

10 **ping 172.16.10.10**

11 **ping 10.1.1.1**

14.2.1.2 ROUTE TABLE

Step	Procedure
1	From **Main Menu**, select **Route Table** sub-menu.
2	Enter **1** to configure the first route
3	Enter a suitable name
4	Set **IP Address** to **172.17.10.0**
5	Set **Number of Subnet Bits** to **24**
6	Enter the **next hop IP address** which is **CiM 2's HDLC IP Address, 10.1.1.2**

14.2.1.3 SAVE CONFIGURATION

Save parameters to permanent storage.

14.2.8 CiM 2 Configuration

Disconnect RJ-11 end of the console cable from CiM 1 and connect it to CiM 2.

14.2.8.1 Setting IP Address(es)

Step	Procedure
1	From the **Main Menu** select **Network Configuration** sub-menu.
2	Set **Ethernet IP Address** to **172.17.10.10**.
3	Set **Subnet Prefix Length** to **24**.
4	Set **HDLC IP Address** to **10.1.1.2**.
5	Set **RX – Enable/Disable** and **TX – Enable/Disable** to **Enable.**
6	From **Receive HDLC Channel Address** menu set **HDLC Addr 1** to **1 (0x0001)**

The other parameters can be left to their factory default settings. At this point you should be able to ping CiM 2 from PC 2:

7	**ping 172.17.10.10**
8	**ping 10.1.1.2**

14.2.8.2 Route Table

Step	Procedure
1	From **Transmitter Configuration,** sub-menu select **Route Table** sub-menu.
2	Enter **1** to configure the first route
3	Enter a suitable name
4	Set **IP Address** to **172.16.10.0**
5	Set **Number of Subnet Bits** to **24**
6	Enter the **next hop** IP address which is **CiM 1's HDLC IP Address, 10.1.1.1**

14.2.8.3 Save Configuration

Save parameters to permanent storage.

14.2.9 Verification

At this point the basic configuration is over and you should be able to:

- Ping PC 1 from PC 2 and vice versa
- Ping CiM 2 from PC 1 and vice versa
- Pass any other data between the 2 PCs

If Pings are not successful, refer to section 14.3, Troubleshooting IP Module.

14.3 TROUBLESHOOTING IP MODULE

Use the following troubleshooting steps if unable to succesfully complete “CiM IP Module Checkout”.

Step	Problem	Action
1	No Ping response from the locally connected PC to the CiM ethernet port. ICMP resonse is ‘Request timed out’ or ‘Destination host unreachable’.	1) Verify correct IP address/subnet on PC and CiM. 2) Verify ethernet connection – cables, hub, etc. PC and CiM should have Ethernet activity LED lit. NOTE: a PC must be connected to the CiM using a hub, switch or a RJ45 crossover cable.
2	No Ping response from the locally connected PC to the CiM HDLC port. ICMP resonse is ‘Request timed out’ or ‘Destination host unreachable’.	1) Verify the PC gateway is set to the IP address of the CiM ethernet port
3	No Ping response from PC 1 to PC 2 or vice versa. ICMP resonse is ‘ Reply from 172.1X.10.10 - Destination host unreachable’	1) Verify CiM Route Tables are correct
4	No Ping response from PC 1 to PC 2 or vice versa. ICMP resonse is ‘ICMP resonse is ‘Request timed out’.	1) Verify CiM HDLC IP address/subnet and HDLC Channel Address settings are correct. 2) Send a constant ping from the PC 1 ‘ping 172.1X.10.100 –t’ to PC 2. In the CiM 1, go to Operations and Maintenance/Diagnostics. Enable ‘Dump Packets transmitted to Satellite Interface”. Verify that the Pings are being transmitted by observing 1 packet on CLI every second. If not displayed, reverify PC 1 and CiM 1 settings.

3) Continue sending constant ping from the PC 1 to PC 2. In the CiM 2, go to Operations Maintenance/Diagnostics. Enable ‘Dump Packets received from Satellite Interface”. Verify that the Pings are being received by observing 1 packet on CLI every second. If not displayed;

a) Reverify PC 2 and CiM 2 settings.

b) Verify IF link between modems for proper settings and carrier quality (RX signal leval, Eb/No, etc). It is possible that there is a spectrum inversion, particulary if you are using the CiM-550L with RF converter equipment. If this is the case, the signal level & Eb/No may be OK, but no data will be received. To correct this invert the TX and RX Spectrum on one of the CiM-550L’s.

NOTE: All pings transmitted will require a reply to be transmitted from the target host. Use the Diagnostics ‘Dump Packets” tools to isolate where packets are lost in the CiM duplex paths. Also, always disable “Dump Packets” before sending live traffic.

Application Note - Flash Upgrading the CiM-550 Satellite Modems

Flash Upgrade Overview

Many Comtech EF Data modems use "flash memory" internally, eliminating the need for physically replacing firmware. The advantages of using flash are many, but perhaps the greatest benefit is realized by not having to disassemble the modems to replace an integrated circuit. New firmware can simply be uploaded to the units from an external PC.
The CiM family of modems have base modem firmware (M&C) and CiM module firmware.

IMPORTANT

Performing a base modem M&C flash upgrade erases the non-volatile RAM, which is where the modem's configuration is stored. Users must re-enter the desired configuration parameters.

Note: While the M&C and CiM module firmware downloads are independent processes, the modem may require the latest firmware releases for both the M&C and CiM module for proper functionality.
Flash updating firmware is a simple process, and users can now obtain upgrades by any of these convenient means:
Download from the Comtech EF Data website (http://www.comtechefdata.com)
Download from the Comtech EF data FTP Site (ftp://ftp.comtechefdata.com)
Contact CiM Field Support for downloading information (cimfss@comtechefdata.com)
Request as E-mail attachments
Request shipment on diskettes or CD-ROM.

The M&C upgrade can be performed without opening the unit, by connecting the modem to the serial port of a computer and executing a flash uploader software program. The cable to connect the PC to the modem is the same as is used for normal EIA-232 remote control, and comprises three wires connected between two 9-pin "D" type female connectors. Ensure this cable is connected and working properly before proceeding with an M&C or BULK firmware flash upgrade.

The CiM module firmware is upgraded by using an FTP utility to transfer the flash files to the modem. The cable to connect the PC to the modem is a standard 8 pin category 5 Ethernet cable. An Ethernet switch, hub or crossover cable is required to facilitate proper connectivity. Ensure this connection is working properly before proceeding with a CiM module firmware flash upgrade.

IMPORTANT

The Remote Control port EIA-232 lines used for Flash upgrading are also connected to the Primary 25-pin data connector (P3B), and are used when 1:N Redundancy Switch is connected. Please ensure that NOTHING is connected to P3B pins 4, 21 and 22 – if these pins are used, the EIA-232 remote control port will not function, and Flash upgrading will be impossible.

Downloading Flash Upgrades from the Web

Base Modem (M&C or BULK Firmware)

The latest firmware releases and a free software utility are available on the Comtech EF Data web site (http://www.comtechefdata.com). This utility is designed to run under Windows 95/98 or Windows NT/2000/XP and provides all of the support required to perform a Comtech EF Data firmware reflash. If web downloading is not available or practical, contact the Customer Support department to obtain the firmware via an alternate method.
The downloadable firmware files are provided in both .zip or self extracting .exe formats. If your firewall does not permit downloading an .exe file, try the .zip file instead. The downloadable file contents are identical, usually comprising an uploader program, a help file, and a flashable data file.

How to Download Base Modem M&C Firmware Flash Upgrade Files

Step	Procedure
1	Create a new folder on the PC. This folder will be the destination folder for any flash upgrade files downloaded.
2	On the Comtech EF Data web site (http://www.comtechefdata.com/), click the "downloads" link.
3	Click the "flash upgrades" link for detailed downloading instructions. There are two primary instruction sheets, one for the base M&C/BULK firmware and one for the CiM-550 and CiM-300L IP module firmware. The instruction sheet displayed will be for the M&C/BULK firmware.
4	Click the "flash firmware data files" link (located at the bottom of the instruction page). The flash firmware data files are organized by product.
5	Click the product type.
6	Identify and download the latest base modem M&C firmware file to the destination folder on the PC.

How to Perform a Flash Upgrade for Base Modem M&C Firmware

Included in the M&C download is an uploader software utility program. Full online help is provided with this uploader program. However, if you experience a problem, or have a question, contact Comtech EF Data Network Customer Support for assistance.

Step	Procedure
1	On the PC, double-click the *.exe* or *.zip* flash upgrade file to uncompress its contents.
2	Identify and execute the uploader program.
3	Follow the instructions presented on the screen to select a firmware file and initiate the upload.

Following a successful upload process, the modem will automatically restart, running the new version of the firmware.

CiM IP Module Firmware

Perform the CiM IP Module upgrade by using an FTP (File Transfer Protocol) utility program.
The latest firmware releases are available on the Comtech EF Data web site (http://www.comtechefdata.com). An FTP utility is required to perform a Comtech EF Data firmware reflash. If web downloading is not available or practical, contact the Network Customer Support department (cimfss@comtechefdata.com) to obtain the firmware via an alternate method.
The downloadable firmware files are provided in both .zip or self extracting .exe formats. If your firewall does not permit downloading an .exe file, try the .zip file instead. The downloadable file contents are identical, usually comprised of several flashable data files.

How to Download CiM IP Module Firmware

Step	Procedure
1	Create a new folder on the PC. This folder will be the destination folder for any flash upgrade files downloaded.
2	On the Comtech EF Data web site (http://www.comtechefdata.com/), click the "downloads" link.
3	Click the "flash upgrades" link for detailed downloading instructions. There are two primary instruction sheets: One for the base M&C/BULK firmware and one for the CiM-550 and CiM-300L IP module firmware. The instruction sheet displayed will be for the M&C/BULK firmware. Click on the link for the CiM module to display the CiM firmware upgrade procedure.
4	Click the "flash firmware data files" link (located at the bottom of the instruction page). The flash firmware data files are organized by product.
5	Click the product type (CiM-550 or CiM-300L).
6	Identify and download the latest IP module firmware file to the destination folder on the PC.

How to Perform a Flash Upgrade for the CiM IP Module

Step	Procedure
1	On the PC, double-click the ***.exe*** or ***.zip*** flash upgrade file to uncompress its contents. Ensure that the following unzipped files are located in the directory: fw9781-1x.mpp, where "x" is the version number (FPGA). fw9630-1x.mpp, where "x" is the version number (Application). fw9630-2x.mib, where "x" is the version number (CIMController mib). fw9630-3x.mib, where "x" is the version number (CiM550.mib). fw9630-4x.mib, where "x" is the version number (CIM300L.mib). fw9630-5x.mib, where "x" is the version number (CIM550Traps.mib). fw9630-6x.mib, where "x" is the version number (CIM300Ltraps.mib). Notes on .mib files: The .mib files are only needed when using SNMP operation with a customer-supplied MIB browser. The .mib files are compiled on a MIB Browser (CiM Controller mib must be compiled first, refer to compiling instructions provided with the MIB Browser that you are using). The CIMController.mib (fw9630-2x.mib) file is required for proper SNMP operation of both the CiM-550 and CiM-300L. The CiM550.mib (fw9630-3x.mib) file is required if you are using CiM-550 modems. The CiM300L.mib (fw9630-4x.mib) file is required required if you are using CiM300L modems. The CIM550Traps.mib (fw9630-5x.mib) is required if you are only using the CiM-550 and using SNMP v1 traps. The CIM300LTraps.mib (fw9630-6x.mib) is required if you are only using the CiM-300L and using SNMP v1 traps. The CIM550Traps.mib and the CIM300LTraps.mib are not required if you are using SNMP v2 traps.
2	Connect the Client PC to the CiM Modem via an Ethernet Hub, Switch, or Ethernet crossover cable. Verify the connection by issuing a "ping" command to the CiM.
3	Initiate an FTP session with the CiM by typing "ftp xxx.xxx.xxx.xxx" where "xxx.xxx.xxx.xxx" is the IP address of the CiM. Enter your admin user name and password to complete the login.
4	Verify the FTP transfer is binary by typing "bin".
5	Type "prompt" then type "hash" to facilitate the transfer process.
6	Type "mput *.mpp" to begin the file transfers Note: This will load the Application fw9630-1x.mpp and the FPGA fw9781-1x.mpp files.
7	After verifying a successful file transfer, terminate the FTP transfer by typing "by".
8	Reboot the CiM. Verify the new software versions are booting by observing the following messages on the terminal screen: "Booting flash image fwXXXX-YY, version Z.Z.Z (Appl #2)" where XXXX-YY is the firmware number/revision and Z.Z.Z is the version number. "Programming FPGA using image UART (FPGA #2)… Done"

If you experience a problem, or have a question, contact Comtech EF Data Network Customer Support for assistance:

Comtech EF Data Network Customer Support
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METRIC CONVERSIONS

Units of Length

Unit	Centimeter	Inch	Foot	Yard	Mile	Meter	Kilometer	Millimeter
1 centimeter	—	0.3937	0.03281	0.01094	6.214×10^{-6}	0.01	—	—
1 inch	2.540	—	0.08333	0.2778	1.578×10^{-5}	0.254	—	25.4
1 foot	30.480	12.0	—	0.3333	1.893×10^{-4}	0.3048	—	—
1 yard	91.44	36.0	3.0	—	5.679×10^{-4}	0.9144	—	—
1 meter	100.0	39.37	3.281	1.094	6.214×10^{-4}	—	—	—
1 mile	1.609×10^{5}	6.336×10^{4}	5.280×10^{3}	1.760×10^{3}	—	1.609×10^{3}	1.609	—
1 mm	—	0.03937	—	—	—	—	—	—
1 kilometer	—	—	—	—	0.621	—	—	—

Temperature Conversions

Unit	° Fahrenheit	° Centigrade
32° Fahrenheit	—	0 (water freezes)
212° Fahrenheit	—	100 (water boils)
-459.6° Fahrenheit	—	273.1 (absolute 0)

Formulas
C = (F - 32) * 0.555
F = (C * 1.8) + 32

Units of Weight

Unit	Gram	Ounce Avoirdupois	Ounce Troy	Pound Avoir.	Pound Troy	Kilogram
1 gram	—	0.03527	0.03215	0.002205	0.002679	0.001
1 oz. avoir.	28.35	—	0.9115	0.0625	0.07595	0.02835
1 oz. troy	31.10	1.097	—	0.06857	0.08333	0.03110
1 lb. avoir.	453.6	16.0	14.58	—	1.215	0.4536
1 lb. Troy	373.2	13.17	12.0	0.8229	—	0.3732
1 kilogram	1.0×10^{3}	35.27	32.15	2.205	2.679	—

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